TRENDS IN EDUCATION

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Questions for Planners
Education through Experience
Technology and the Schools
Bringing in Parents
Innovation in the Colleges
School Administration
English in Malaya
Sixth Form Survey

JULY 1967

Department of Education and Science

HMSO 3s 6d NET

Annual Subscription 16s including postage

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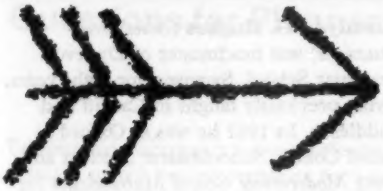

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The Editorial Advisory Board of Trends in Education *consists of senior officers of the Department and senior members of the Inspectorate. The Chief Information Officer is general editor, supported by an executive editor (Martyn Clémans) and an associate editor (David Hopkinson, HMI). Correspondence should be addressed to the executive editor.*

TRENDS IN EDUCATION
is produced quarterly by the Department of Education and Science, Curzon Street, London, W.1.

Published by Her Majesty's Stationery Office

Printed in England by C. Tinling & Co. Ltd., Liverpool, London and Prescot.

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DES has a new planning branch. Educational investment planning was discussed by European Ministers of Education in May. What are the aims and methods of planners in this field?

Questions for Planners

Educational planning can mean different things to different people: a primary school teacher preparing for a term's work . . . a comprehensive school fitting together a hundred staff and two thousand pupils in a new timetable . . . the Schools Council devising new-style curricula to follow the raising of the school-leaving age . . . a regional advisory council considering the best pattern of development of advanced further education courses. . . . In the education service as elsewhere people are always looking ahead and making plans to accomplish their objectives. Nowadays however the phrase is often used specifically in a sense long familiar in education offices, which have to make provision for school places and teacher recruitment in their areas. This is planning in relation to the supply of buildings and manpower, economic resources to which the education service must lay claim in order to carry out its educational tasks. It is not so much educational planning perhaps as investment planning, or—to be more precise—educational investment planning; and there is need here for a new framework of thought in which educationists and economists, statisticians and sociologists, are becoming involved in this and other countries.

The arguments for getting such a framework set up are powerful. The sheer bulk of the education service makes it a big business that has to be grasped in big business terms. Anything which mops up 5 per cent of the national income (which means all the wealth being produced by all the people) can hardly be left to grow Topsy fashion—particularly at a time when there are more people (because of a higher birth rate) to be educated and when a rising proportion of them want to be educated for a longer period and to a higher standard. Questions crop up like how much public money ought there to be for education and which ways of spending it will give you the best value. To get a grip on questions like these new ranges of statistical information, one might almost say a new technique, will be needed.

There are other sorts of questions too that come up in today's debates about education. There is a growing support for the idea that it ought to compensate for social and economic inequalities in particular personal backgrounds by giving some people more according to their need. This sort of concept can stay pretty vague unless you can first quantify the degree and location of the need and then bring it into some relationship with the service that the education system offers. Or looking at it from the other end—from the needs of society rather than from the needs of the individual—it is clearly desirable that the education system should produce enough of certain sorts of people that society needs: teachers themselves, for example, doctors and engineers, and well-qualified craftsmen and technicians.

For all these purposes it may be helpful to have, as it were, a model of the system at work—a sort of animated flow-chart, in which we can watch the movement of resources and of people receiving education, showing how the system 'joins on' to the rest of the economy and how changes introduced in one part of it are likely to affect the other parts. What sort of features ought such a model to have and what sort of questions ought it to be able to deal with? This problem was recently examined by a number of experts drawn from member countries of the Organisation for Economic Co-operation and Development (the successor body to the OEEC, which used to administer Marshall Aid in Europe). They prepared a handbook of statistical needs for educational investment planning, which was submitted to a conference of European Ministers of Education in May. Experts from the United Kingdom contributed to its contents, and experience in this country since the war has had some influence on the shape of the framework that is being developed. It may be expected in turn to influence the scope and methods of educational planning in the years to come.

Building Plans and Teacher Supply

Both school and further education building proposals and teacher supply have been subject to detailed planning in this country for twenty years. Although the amount of school building carried out in the early postwar years was small by present standards it was soon apparent that the scale and speed of the process would require changes in administrative procedures. The demand was heavy. Wartime restriction had left heavy arrears, there was a new Education Act promising secondary education for all, people were moving to new houses and new jobs, and the birth-rate figures for 1947 forewarned the education service of the coming bulge. Building resources however were scarce in relation to the heavy demands from all the other parts of the economy. Control of school building programmes therefore became a responsibility of central government from 1947, when the first 'operational' programme was announced, followed by the 'short-term' programme. After that came the series of annual programmes which still continue, in the implementation of which local authorities have been further guided by minimum building standards and maximum cost limits. Similar programmes are devised for further education and for the colleges of education.

The universities also faced a building problem in 1947, resulting from the same need for rehabilitation, from an unprecedented increase in the number of students and from the drying-up of many sources of private benefaction. The Government accepted the argument of the University Grants Committee for regular capital grants and subsequently controlled university development by fixing the total value of new buildings to be started each year.

Building programmes throughout the public sector of the economy are subject to Government control of one kind and another. The underlying need for this arises from the fact that the physical and financial resources available for investment of all kinds are limited, and the Government is concerned therefore both to keep the total effective demand in line with resources and to give preference to the more desirable forms of investment. It is within this framework that the Government determines the total size of building and other investment

programmes for social needs, and within the total the share of education has to be accommodated—usually at a lower level than the total of building requirements estimated by the local education authorities and the University Grants Committee.

The planning of teacher supply developed more slowly. The 1944 Act made it a duty of the Minister to secure 'that there shall be available sufficient facilities for the training of teachers'. Five years later a National Advisory Council on the Training and Supply of Teachers was established to keep under review national policy on training, recruitment and distribution. But it was not until 1962 that the Council (in close collaboration with the Ministry) produced a major review of staffing prospects up to 1980, showing that the shortage of teachers was not a temporary difficulty but a deep-rooted and persistent problem. Because of the growing volume and complexity of the work the Department's teachers branch was divided during the same year into two separate branches, one to deal with recruitment and training, the other with supply and distribution as well as qualifications and conditions of service.

There was already a scheme for distribution, operating on an annual basis and designed to enable local education authorities to secure a fair share of the total number of teachers available. Known as 'the quota' this procedure, though it had roots in earlier measures to control distribution, derives directly from a conference with authorities and teachers in 1956. Each January the Department, having estimated the likely supply for a year hence, gives to each authority a quota they should aim to be employing by that time. It is essentially a device to protect the harder-pressed areas in the short run rather than an element in investment planning.

In a further report from the National Advisory Council, published in 1965, the projections for teacher supply and demand were carried forward to 1986. Since the publication of that report the figures have been kept under review in the Department.

Forward estimates of pupils in school in England and Wales have been published annually by the Department for some years and since 1962 in *Statistics of Education*. The figures for that year extended up to 1980 and were prefaced by a necessary warning. 'In providing more detailed forecasts of future school populations than any previously published, the Ministry incurs a greater risk of being proved wrong by events. This risk is worth taking if it contributes towards a better appreciation of possible future patterns of educational development'. The basis of the calculations is the estimates of future births made by the Government Actuary's Department in consultation with the General Register Office. When these estimates are changed (as they were, for example, during 1962) the school population estimates must be adjusted accordingly.

The projections published in December 1966 covered the United Kingdom for the first time and carried the figures up to 1990. They embody two sets of assumptions. The first relates to births and the child population and include the following (all more or less speculative): that the average age of marriage of women will continue to fall, that there will be some increase in the average size of completed family for a given age of a woman's marriage, that there will be a gradual slackening in the trend towards a shorter interval between marriage

and the birth of children, and that death rates of children and young adults will steadily decline. The second set of assumptions relate to the school population itself, the principal ones being that the statutory school leaving age will be increased to sixteen in 1970–71 and that the upward trend in voluntary staying on beyond that will continue.

In the last decade or so the view has emerged (and indeed was given explicit recognition in the report of the Plowden Council on primary education in January 1967) that educational opportunity ought to be tilted in favour of the socially and economically disadvantaged children, rather than the reverse as in the past. In the primary schools this might involve a more than proportionate share of the teacher quota and additions to the normal building programmes. The Plowden report suggested a number of criteria to 'identify these places where educational handicaps are reinforced by social handicaps': proportions of unskilled and semi-skilled manual workers, size of families, supplements from the state in cash or kind, overcrowding and sharing of houses, poor attendance and truancy, proportions of retarded, disturbed or handicapped pupils, incomplete families, and children unable to speak English.

Demand for Higher Education

The Robbins report carried the estimates of demand for places forward into higher education in universities, colleges of education and the technical college system. The basis was 'to consider first the nation's resources of ability and then, making assumptions about the standards of attainment appropriate for future entrants, to examine the likely demand from qualified people'. The committee, resting on a survey of the factors affecting the achievement of school children and on 'ample evidence' from witnesses, discerned 'a vast mass whose performance, both at the entry to higher education and beyond, depends greatly on how they have lived and been taught beforehand'. They concluded that there were large numbers of able young people who did not at that time (1963) enter higher education. Their actual estimates, which were carried forward to 1985-86, were based on the size of the age groups, the proportions likely to reach the level of attainment appropriate for entry, the likely application rate from among those qualifying and the proportion of applicants likely to be accepted. The main element here was the second—in effect, GCE results at an advanced level—and the estimates used by the committee were soon shown to have been conservatively low.

The Robbins committee considered also 'what supply of different kinds of highly educated persons will be required to meet the needs of the nation', but found this approach impracticable as a means of estimating the demand for places in higher education. Some important pioneering work has however been carried out since 1956 by triennial surveys of the stock and future requirements of engineers, technologists and scientists. For more than a decade, while techniques applicable across the whole field were still at the theoretical stage, manpower planning has been in operation in this limited but important area, under the auspices first of the Committee on Scientific Manpower and latterly the Committee on Manpower Resources for Science and Technology. Their surveys, interlocking with the Census of Population by the adoption of consistent definitions, have revealed the considerable

statistical problems involved and the limitations in practice on techniques for forward forecasting. Nevertheless accurate data on the total stock of qualified manpower in these fields and on its distribution is now available more comprehensively than in any other country, including the United States where manpower statistics are compiled on a 'respondents only' basis.

The latest report in the series, published in October 1966 and including also the demand for technical supporting staff, pointed out that 'educationists must know requirements in good time, in order to produce sufficient numbers of engineers, technologists, scientists, and technical supporting staff of the right quality and with the best preparation for their careers'. The scope for extending this kind of inquiry to other ranges of highly qualified manpower has been under examination in a number of places, and as Philip Redfern pointed out in his article in *Trends in Education* No. 3 'the subject is likely to be of increasing importance as part of the wider problem of economic growth'. In the same article Mr. Redfern explained the development by the Department's statisticians of a new system of 'individualised data' (I.D.) for assembling information about pupils, students and teachers as they pass into, through and out of the educational system, and referred briefly to the possibilities of developing a computable model both for planning and projection purposes.

The purpose of a model is to bring together different streams of information, and the OECD experts have been considering how experience in different countries can now enable this to be done along broadly similar lines. Some of the reasons they give for attempting this task are:

(i) An educational system that produces too many young people for jobs that do not exist is economically wasteful; so is one which fails to produce enough people with the qualifications society does need.

(ii) Subject to such economic needs as these, it is desirable that each individual should receive the education best suited to his inherent individual capacity and wishes.

(iii) The educational system is a heavy user of resources: the supply of teachers, buildings and equipment must be planned and paid for.

The first of these considerations suggests a 'manpower approach' to educational planning, the second a 'demand for places approach': the needs of society on the one hand and the needs of the individual on the other, with society perhaps going out of its way to encourage fuller participation by individuals who may not at present be making full use of the facilities, e.g. the socially handicapped. The OECD group concluded that 'no realistic educational planning can ignore either the qualified manpower requirements of the economy or the desires of individuals, nor indeed can broader social objectives such as the democratisation of educational opportunity be neglected'. But neither of course can planning ignore the limitations of available resources and the problems of financing their flow into educational uses, including choices between one educational use and another—such as expenditure on downtown schools rather than on higher education for the most able, or on GCE advanced level courses in technical colleges for those who opt for them instead of staying on for sixth form work in schools,

or on one form of higher education rather than another on grounds perhaps of cost-benefit or the social utility of the end-product.

The model should, at its most ambitious, be able to answer questions like:

(i) how would the system develop if there were no change in the present structure?
(ii) what would be the likely effect of policy decisions on the number of pupils in each section?
(iii) how should the system be made to develop if specific targets are to be achieved?

One of the main difficulties about a demand-for-places approach is that although the figures purport to be based on the demand for places only, in practice they are based also in part on the number of places available. The number of students applying for places in higher education may be influenced by their own estimates of the places available, and—deeper still—by whether there is a tradition of higher education in the social class from which they come. So the ultimate objective must be 'to develop planning models which are part of the decision making structure itself in such a way that there is a continuous feedback between the projections of the model and the actual decisions and actual developments in the real world'.

Difficulties soon arise too in the sociological aspects of educational planning. It is easy nowadays to list social attributes which affect educational attainment—sex, parental education and occupation, family income and size, attitude to education, place of residence, and so on—but this is likely to be only the first of a long sequence of stages. What, for example, about the different impact of these factors as between one part of the country and another, or between town and country, not to mention the different stages of the educational process itself? What is needed is some procedure for relating the relevant variables, beginning with the collection and analysis of data in which the socio-economic characteristics of the young are the central focus. Given some improvements in the records of vital statistics such data could be available to educational planners years before children arrive at school. By means of a survey or census of the population of school age it should be possible also to develop analytic models that could guide educational planners as to where and how prevailing inequalities in opportunity could be attacked with the greatest chance of being effective.

National Employment Needs

Turning next to the manpower approach we move from estimates of input into the education system to estimates of its output. The first problem here is that economists find it difficult to identify what is meant by educational output: a specific formal qualification for, example, or a well-rounded man? The best way of dealing with this problem may be to concentrate on some selected aspects of educational output which have some economic significance: the skills, talents, aptitudes and attitudes with which education can endow the future working population.

It is with future patterns of requirements that the exercise must begin, working backwards to the education service. There are at least two good reasons, however, for pitching the exercise in broad terms and

avoiding an excess of detail. One is that a changing technology is itself constantly modifying the pattern of employment. The other is that despite the growth in professionalism at all levels, there is still a considerable inter-changeability of personnel in many jobs. Estimates are therefore probably best couched in terms of educational output targets showing in a general way the amount of certain types of manpower likely to be needed, rather than as precise manpower requirements. An essential starting point is to build up an accurate picture of the present distribution of qualified manpower, linking this to what happens to students when they leave the education system.

In this way it is possible to move towards the construction of a manpower flow matrix, linking economic and educational planning and providing a basis for testing the outcome of different policy assumptions in either field. To help in constructing such matrices the OECD group suggested that future censuses should include retrospective questions on qualifications and occupation and that consideration should be given to individualised data systems for the whole or a sample of the adult population.

Discussing flows within the education system the group emphasise the importance of a number of points where decisions are made which may have a major effect on a child's future career: at the beginning, whether to enter a public or private school; between different streams or courses; at the end of compulsory education whether to stay in the system full-time, part-time, or not at all; and into which type of further or higher education to seek entry.

Finally the group discusses the estimating of costs and the various financial mechanisms by which these costs may be met, bearing in mind that it is by controlling or influencing financial flows that policy makers and administrators can direct the allocation of real resources. For this purpose a distinction is made between transfer payments, such as from central to local government or in grants to students, and money flows such as teachers' salaries which represent a claim on resources.

* * *

In the autumn of 1966 the Department of Education and Science established a Planning Branch to focus its various planning functions at a central point. The new branch incorporates the statistical and economic staff, together with officers responsible for the oversight of educational research. By examining relationships between different elements of policy this work will provide a better basis for choosing between alternative patterns of development. In particular the branch will be concerned with the implications of policy developments in terms of money, manpower, and other scarce resources. Its immediate terms of reference include the distribution of students in higher education between universities, colleges of education, polytechnics and other colleges, within the further education system; the educational implications of manpower studies; and a review in cost-benefit terms of provision for the 15-18 age group in schools and elsewhere.

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A practical approach to education in social skills and social responsibility is outlined by a Midlands headmistress.

Education through Experience

LUCY M. WITHERSPOON

For many years teachers have been experimenting with methods of teaching which will prove more successful with our slower pupils than the usual academic approach. Much of this work has proved unfruitful because we have assumed that the subject matter of education is sacrosanct. This subject matter is determined by the original academic intentions of education and lends itself to an analytic approach. Indeed, one might suspect that all our subject matter has been selected simply because it lends itself to this particular analytic and logical approach, i.e. analysis, classification, the separation of ideas from reality, the application of these ideas to hypothetical situations.

This is one way of becoming educated. The progress mankind has made on this basis is enormous, but we are all aware that it is an approach which is very foreign to at least 75 per cent of our population and that this proportion fails to progress beyond a very low level of academic analysis. A good memory, a strong ambition and individual attention will force another 10 per cent perhaps into achieving some success in these fields but we are not tapping the full potential of at least 60 per cent of our children because the subject matter and method has no corresponding mental structure into which it can be fitted and recalled naturally, as part of one's everyday life.

The third year in secondary schools also sees a great change in the attitude of children to their schooling. Adolescence plays an important part in this change but I would like to suggest that the energy released explodes against the mental, emotional and physical restrictions of school simply because they are now restrictions and no longer vehicles of further personal development, as they have been in the junior and lower secondary schools. And this, I am convinced, is so because the academic framework demands a greater refinement of abstraction at the moment when the children's natural development demands a wider range of direct experience. This experience is to be found among people; it deals with personal relationships, it finds expression in social contacts and self discovery, and finally it is as clearly and obviously necessary to each child's development as are reading, writing and number to the infant and junior child. These basic skills are taught in good infant and junior schools by methods which enable each child to feel he is directly in contact with his world and becoming its master. Children in the secondary stage need a similar exploration and growing understanding of the world of people and a growing mastery of themselves within that world.

To deal with this world by means of academic procedures and techniques is easy enough—civics, social studies, modern history, economic geography. Vocational opportunities can be analysed, programmed and

fed to the children in carefully prepared and measured doses. But this is not the living world to which our children belong. They are being plunged into the analysis of situations which they have not yet explored, of which they have only the vaguest and most unsatisfactory experience and therefore upon which their imaginations cannot work. The experience of being accepted as responsible people mixing with adults, of carrying responsibility for themselves, of discussing adult problems, of consulting experts on the organisation of our adult world, is the basic material of social education in the same way as experience of number relationships is the basic material of mathematical education. This practical approach to education in social skills and social responsibilities has already proved very successful in ending the feeling of frustration experienced by adolescents faced with more 'academic' work.

We have, therefore, changed the whole system of school organisation for fourth year pupils and we shall change it for the third year also when it is possible to do so. The change involves removing the limitations inherent in a formal timetable and the demarcations imposed by 'subjects'. Four out of ten sessions each week are blank in the sense that no subjects appear on the timetable at all. This time is time to organise things, to create things, to find out, judge and report on things. These 'things' are all connected with the pupils' own lives either at a personal level, or as influences acting upon them through the community or through mass media.

Generally the method is to plunge the children into situations which provide the practical experience of various social skills, not without guidance, but with the situation sufficiently alive, real and open-ended to engage the children in direct personal experience, and allow them opportunities to play their own part in it, preferably so that they can see the results of the part they have played.

'Guidance' takes the form of discussion, collecting information, searching for alternatives and listening to advice before making, finally, personal decisions upon which they must act. It involves the give and take of listening to other people's opinions, accepting, as well as giving judgements, working together and smoothing out differences so that action can be taken which will satisfy the working group. It includes discussion of their own reactions to various suggestions in order to recognise and face up to the personal factors which govern their behaviour. It includes a great deal of discussion about their activities in which advice from the pupils themselves is considered by the group, and incorporated wherever it proves useful. There is much individual involvement at every stage, for, as in real life, advice may be ignored, and so acceptance itself becomes an active rather than a passive thing. Rejection of advice produces so tremendous an upsurge of determination to prove oneself right that one very often is right.

The emphasis all the time is on direct experience; gathering it, thinking about it, discussing it with others, recording it. Most of the situations are found outside schools. From this practical experience of social situations, wider problems can be tackled and more imaginative experiences explored through literature, drama, through art and music for those who can participate in these experiences creatively, through social problems appearing in the press, through television news and features, through film documentaries and stories. Method and material

of the course is inextricably bound together and I shall attempt to give details of techniques of teaching and learning while dealing with the subject matter covered in the course.

Basic Skills

The basic practice of mechanical arithmetic is removed from the course and in time might well be cut out altogether. But the application of mathematical skills is used in all sorts of ways in connection with the interest followed by different groups. Accounts are kept of all money spent as a normal part of each child's record. We have had no mistakes made over the spending of their own or school money. Having made an estimate of their needs, in detail, they are given that amount, do their shopping, bring back receipts, write out a statement, attach statements and receipts and hand them in with the change to the member of the staff in charge. If they under-estimated they use their own money and have it refunded. We use the school fund as our bank, get as much back as we can from the education office, and bear the rest ourselves. When our funds run low the pupils organise all sorts of efforts, keep their accounts, hand in their profits and have it announced to the school. Accounts of these efforts are put on the school notice boards so that everyone is fully informed. Graphs are used for recording results. Working to scale is used for finding distances in connection with their visits. Their enquiries into methods of saving involve considerable work with simple and compound interest. Their comparisons of prices explore hire purchase, deferred payments, accounts at shops, as well as the vagaries of private shops and supermarkets. Bus and train timetables are needed for their excursions and so on. None of this arithmetic is done as such. It is merely part of the 'real life' situation they are exploring at the moment. And each small group (often composed of only two children) may well be doing something quite different.

The practice of English is an integral part of the whole course. We learn our native language by learning how to behave in situations, not by learning rules about what to say. All formal exercises are cut out. All aspects of English work are covered by the discussion, searching for information, recording their work and talking to people and on behalf of people. Only literature, the study of a book, play or poetry is given a time-tabled period and a separate existence. This is done largely to ensure the availability of television plays and the help of an expert.

The time devoted to literature is a very specific and important core or heart through which sympathetic understanding of other people and a deeper understanding of themselves develop. These understandings enrich and carry nourishment to the practical work of dealing with people and with themselves. The study of any work of literary merit provides not only insight but a vocabulary which will help the pupils to express themselves and a sentence structure that will give body and force to their own speech and writing. These are things which come through the identification of oneself with the characters and are to be encouraged by every means within the teachers' skill and inventiveness. The Bible story of Noah, the mediaeval version of the guild plays, Benjamin Britten's *Noye's Fludde* all carry the seeds of compassion, recognise the need for security and acknowledge the deep satisfaction

of dangers survived together. These are as fundamental to our modern life as to any primitive society. *Romeo and Juliet* and *West Side Story* reveal equally well the duties we owe to society and the price paid for rebellion. Bernard Shaw and *My Fair Lady* recreate in different forms man's unending desire to make something better. *Jane Eyre* and *Nine Coaches Waiting* by Mary Stewart tell the same story as *Cinderella* repeated in the imagination of every adolescent girl. The story of Icarus, the tales of Jules Verne, and modern science fiction hanker after further realms of mystery. Midas in legend, *The Pearl* by Steinbeck explore the same combinations of fascination, envy and self-justification that we all feel in our relationship with wealth. Literature can be a means of expressing, through other people's lives, each person's developing feelings. It can teach us, or at least give suggestions on how to cope with them reasonably and satisfactorily. It is a means of experimenting with misunderstood emotions and of widening the concepts associated with these emotions. And also it helps to give some mastery of the language necessary to the development of maturity.

The Newsom Report says: 'Personal and social adequacy depend upon being articulate, that is, on having the words and language structures with which to think, to communicate what is thought, to understand what is heard and read.' It is only through extensive listening, reading, participating imaginatively in other lives that words and language structures can be absorbed and become the vehicles of each individual's growth towards adequacy. This language structure will determine quite considerably the way the pupils think, the way they will create, the way they will develop. At least it presents them with ways of living, thinking and expressing themselves which their own lives have not provided. The appreciation of beautiful things is not limited to those with an academic intelligence. The desire to live a successful and satisfying life is not felt only by the ambitious.

It is necessary to widen enormously the range of books read, films seen, art looked at; to be adventurous in exploration and to use every means available to keep the children's emotions alive and to provide means of developing both vitality and control. All the great needs of mankind appear in play, story and novel over and over again. It is 'catching on to' this universal element that enlightens and extends the child's imagination. To the dullest adolescent these basic elements of life are as real and as moving as to intelligent ones. It is upon this recognition of common feelings that improvement in the use of English will depend.

As a subject, the rest of English disappears and the true function of language is put to its proper use: thought, communication. In the process of listening to speakers, television and wireless programmes, teachers and other pupils, the children extend their vocabulary to cope with the problems they are meeting, they become familiar with sentence structures, and are influenced by accent and intonation. In the process of discussing problems and putting forward suggestions they learn to arrange their ideas logically. In discovering information they practise their reading and learn to select relevant data. The progress is steady, sometimes rapid, because the drive behind their work is the need to say or write what they think or have seen or have done personally. It is first-hand reporting. Similarly there is no history, geography, science, needlework, art, craft, and music as such. All are

involved to a greater or lesser degree in the matter under discussion and the ploys in action.

These 'centres of interest' are connected closely with the pupils' needs, and these, being in their fourth year, are largely covered by the following considerations:

What is my town really like? How does it work?
What am I? How do other people see me?
What are other people like? What makes them act as they do?
How can I earn my living?
What am I going to do with my life? How can I make the most of it?

Put like this it sounds very ego-centric, but it is obvious that each one has so many ramifications .... civic, psychological, historical, geographical, architectural, financial .... that no child can find itself enclosed in a separate world. Even looking at their town from the top of a high building and finding on the map what they are looking at is an entirely new experience in accuracy for all the members of the group. Seeing the model and maps of the town's future development, with an architect to explain and answer questions, extends their imagination as well as providing them with hard facts. Meeting the mayor, members of the council, and the town clerk adds reality to civic organisation and provides opportunities for genuine expressions of opinion on both sides. Writing letters, giving votes of thanks etc. introduce them to the formalities of social intercourse and help them to realise that these formalities carry them over the awkwardness of beginning and ending temporary associations. Formalities are not despised when the pupils discover them to be props and stays in a shifting social experience.

Shared Activities

In all cases the individual pupils arrange their visits, doing the necessary letter writing, 'phone calls, welcoming and introducing, speeches of thanks and written acknowledgements. Two pupils will arrange one visit for a whole group, and at the beginning of term the visits are discussed and allocated, and as the replies come in a calendar is developed. In this part of the work they would include visits to sewage disposal units, water works, hospitals, clinics, nursery schools, parks department, the town hall, libraries, museums, art galleries. Some of these activities are shared, i.e. a small group go to each and report back to the rest. Those girls doing a course with a social bias would concentrate on this side while those doing a home biased course would look at the town as a shopping centre and a housing area, surveying facilities and comparing bargains, as well as doing the basic organisation of town life.

'What am I, and how do other people see me' may sound very self centred but what adult begins to understand others until he understands himself? Individual needs for knowledge of their own physiological processes, for admiration, for friendship, for hobbies, for money, for success are discussed, using television broadcasts, films, film-strips, books, magazines, ('letters to the editor' are excellent stimuli), visiting beauty specialists and fashion shows. What other people think of teenagers (do they see themselves here?) in newspapers, on film, broadcasts, on posters, what their mothers and fathers think, what their boy and girl friends think of them. And all the time, why such opinions

arise. This is a very valuable part of the work for it makes them see how opinions are formed. An awareness of the strength of opinions as opposed to evidence is a valuable counterbalance in life.

'How can I earn my living?' is not only concerned with visiting factories, offices, large stores, hospitals, etc., to discover facts about wages, chances of promotion, working conditions, side benefits and the type of work involved, but is also concerned with what employees think of their work, what qualifications are necessary, how they are obtained, one's responsibility to one's work, to one's employer, to one's union. Discussion about strikes, lock outs, and the reasons for the bitterness existing between work people and their employers starts very frequently with fathers' and mothers' opinions about a local industrial dispute. Started from this angle the whole development of trade unions assumes a reality it never otherwise achieves. Benjamin Britten's *Peter Grimes* also provides comment on this relationship, and a starting point for historical research. Jackdaw Publications are excellent for this purpose. We have found that local employment exchange officials, bank managers, personnel managers of local firms, local magistrates, police officers, welfare officers are very willing to come to talk to the pupils and very successful in stimulating thought. Any event of local interest which influences the social setting of our pupils is used to bring the wider implications into focus. Quarrels with coloured neighbours lead to trying to find out about their customs and attitudes. A group of charwomen ganging up on a coloured conductor introduces and illustrates the concept of intolerance. Teenage crime reported in the papers is discussed, analysed, recorded in graphs, and letters on this subject occurring in the correspondence columns are weighed up. As well as the human problems involved, influence of the printed word is also judged in the light of their own reactions.

Everyday Life

Once the pupils have become aware of the extent to which their everyday opinions are determined by prejudice—though they would not express it thus—it is possible to explore the world of advertisement. Here the BBC help by producing excellent programmes on this subject i.e. *The World of Work* of May 1965 and the programme for technical school students. There are unending examples in our everyday life to illustrate and provide material for every type of enquiry ranging from 'Are the cut prices in self service stores real bargains?' to 'Should the moral standards of parents govern the behaviour of young people?'. Nor are these mere debates with words as currency. The collection of evidence, the recognition of what constitutes evidence to support an argument, play a more important part than the argument itself. The attempt to get inside someone else's skin helps us all to live with each other.

Science is time-tabled to ensure that laboratories and a specialist are available when needed. Their work is closely linked with the course and grows out of it. They all do human physiology in connection with their study of themselves and their study of sexual development. According to the bias of their course, they explore the advantages and disadvantages of detergents and other cleaning materials, the hardness and softness of water, the workings of electrical appliances in the home. the mysteries of plumbing, the hygiene of food preservation, town

water supplies, sewage disposal, etc. and they learn to follow up their own interests independently on occasional 'projects' lasting half a term.

The art, craft and needlework they do is all part of the course and may, or may not, be time-tabled according to the staffing arrangements. Whether time-tabled or not they may use time when needed. Much of this side of the work deals with home decoration, and includes flower arranging, the study of wallpapers, furniture, dress design, pottery, screen printing, making their own outfits for their first job and making children's clothes and toys. The difference lies not so much in what is done, as in how it is done. Pupils move about the school and the town according to the needs of the individual work they are doing and one form may be scattered in a dozen different places. There may equally well be 40 or 50 pupils meeting in one place with tea and cakes (planned and prepared by a group of three or four girls) to look at an exhibition they have produced and to discuss it with each other and the staff. There is a tremendous amount of work in the original planning and in the final checking up and evaluation of each piece of work. There is the constant need to deal with individual calls for help and to cope amiably and tactfully with situations which one can see will lead to failure or excessive waste of time before success is reached. This is, perhaps, the most difficult part of the task for responsibility must not be removed from the pupil if it can possibly be avoided. Nor must teachers allow their personal frustration, when their advice is not accepted, to colour their attitude to the pupils' finished work.

All boys and girls need to develop, as well as skills, capacities for thought, judgment, enjoyment, curiosity. They need to develop a sense of responsibility for their work and towards other people and to begin to arrive at some code of moral and social behaviour which is self imposed.[1]

This is, perhaps, the touchstone by which we judge the value of this course, and it has been necessary to evolve a method of testing at a practical level how far the pupils have developed 'some code of moral and social behaviour which is self-imposed'. We use 'initiative' tests to do this for we feel that a self-imposed code can only be judged by its practical application. At the beginning of the year pupils are given a day in which to prepare and complete a simple piece of discovery for which they have to look up information about routes, times of buses and trains, for a half day visit to some place of interest in the locality.

Except with very slow pupils, no correction of the plans is made at any stage by the teacher. If the pupils get on the wrong bus, read the wrong timetable, or lose their way, they have to use their own initiative to put things right. Each group has a set time to report back to school and variations from this have to be accounted for in detail. Three of these minor initiative tests are done in each of the first two terms. In the second and third terms they are given a week completely free of any time-tabled work and three tasks to complete during the week.

(1) A day's visit to a distant spot of historic, geographical or artistic importance which involves preparing maps, discovering information, preparing picnic meals, and travel arrangements.
(2) A garment or piece of craft to complete. The craft includes pottery, basket work, cooking for a party or family, illustrating a child's story, decorating a room or alcove, arranging the publicity for a charity appeal, etc.

[1] *Half Our Future*, para. 76, page 27. HMSO, 1963.

(3) A 'literacy test' which takes various forms. It can be a straightforward criticism of one of the books presented, or a summary of reports such as those given in *Which*, or a play reading which can be produced by a group of girls.

All pupils choose one task from each of these sections and are then responsible for:

(1) Arranging their own timetable and approaching the staff whose rooms they will have to use.
(2) Allocating the time so that it is most effectively used. This is particularly necessary as they have to buy and prepare food for their picnic meals and any other cooking tasks they have chosen, and arrange their work so that the firing of pots, using machines, etc. does not lead to wasted time.
(3) Completing their work and arranging it for exhibition and discussion at the final 'party'.
(4) Recording in a diary, account and timetable of all they have done.

The staff running these courses check that timetables are possible, give advice when absolutely necessary, issue money against estimates (which have to be reasonable), check up on progress in the few cases which get bogged down. Each member of staff concerned, having worked with this group for a whole year, knows when appeals for help are genuine and judges exactly how much to give without removing the pupil's responsibility for its work.

This week of work with complete responsibility for themselves weeds out the pupils very effectively. Fundamental inability to take responsibility shows up clearly. Ability to plan, persist, to cope with frustration, to adapt plans to reality, to be polite under all circumstances, are demonstrated every day. All members of staff have been amazed by the efficiency and ability to work unsupervised which the students, all average or below average in mentality, have shown.

Those completing the week's work satisfactorily are awarded a certificate listing the qualities they have shown during this week and during the year. To have proved that one can work efficiently without supervision, that one is reliable, conscientious and hard working, and that one can rise to the occasion is a useful introduction to adult life.

These qualities, acknowledged as valuable in the social field, are equal in value and parallel in importance to the store of specialist knowledge, the ability to analyse the factors in a problem, the mental capacity to classify and eliminate. As imagination is the touch of genius in this field, so is sympathy in the social field. This side of education has been too long neglected for it satisfies the developing emotions of the adolescent more effectively than scholarship. I am convinced that this is the sphere we must explore more fully in our secondary education for our children.

There are many ways in which schools can introduce technology into the curriculum. The author discusses why and how the practice should spread.

Technology and the Schools

D. I. R. PORTER

Manpower problems in science and technology continued to cause anxiety throughout 1966, and the recent UCCA Report suggested that again in 1967 schools will be asked to help meet the difficulties which still face us, despite the expansion of scientific and technical education.

The situation needs to be studied at two critical points where supply and demand have to be kept more or less in step by a process of continuous review. There is the point of entry into industry and the professions, with which the October blue book *Report on the 1965 Triennial Manpower Survey of Engineers, Technologists, Scientists and Technical Supporting Staff* (Cmnd 3103) was largely concerned. This survey revealed the extent to which demands were being met during the period 1962-65, to balance estimated demands in the next period, 1965-68, against the likely supply, and hence to draw attention to employment sectors where problems affecting the economy are likely to arise. There is also the stage at which students embark upon courses of higher education and training at the end of their school careers. As far as the universities are concerned the annual surveys of the Universities Central Council on Admissions give valuable data and some indication of the likely output from the universities some three to five years later.

The Manpower Survey records considerable growth in the number of qualified engineers and technologists engaged in higher education but a relatively low rate of growth in the numbers entering important sectors of industry. Yet employers estimated that their requirements over the next three year period (1965-68) would increase by about fifty per cent. All the evidence suggests that this demand cannot be met and that some change in the balance between sectors of employment will be necessary. Meanwhile, the report suggests, it is essential

> . . . to provide higher education for every acceptable candidate who is available as far ahead as can be foreseen; and . . . this should be made known to every suitable candidate, boy or girl, so that none of the acceptable candidates should be deflected from engineering, technology and science.

Since the groups now reaching the age of 17 and 18 are smaller than during the recent past, numbers qualifying for entry to higher education can be sustained only by the increasing tendency for pupils to stay on at school, and for a higher proportion of them to apply to universities. The Manpower Report welcomes this trend and speaks of 'the utilisation of non-academic talents not at present selected by the educational system'. But this is not to suggest that the whole

remedy will be found among the 'non-academic' for the report goes on to say,

> We are deeply interested in and impressed by the project work illustrative of engineering and technology which is being introduced in many schools, and hope that means will be found for affording special financial assistance for its further development since it is probably the most hopeful of the steps being taken to encourage an increasing proportion of the best schoolboys to devote themselves later to the study of engineering or technology.

There is little in the UCCA Report to offset the urgent disquiet of the document about the Triennial Survey: on the contrary, the situation may become worse before it improves. The UCCA Fourth Report refers to the work of the Council during the year 1965-66 and especially to the admission of candidates to first degree courses in October 1966. The report as a whole is a record of impressive achievement. As compared with 1962 the number of candidates seeking entry to university through UCCA had almost doubled and the number of admissions to universities had increased by 40.9 per cent in pure science faculties, 27.9 per cent in technology, 54.6 per cent in arts, 118.9 per cent in social studies and 50.4 per cent in the medical group. Yet when comparing the proportion of the total numbers of candidates applying for a particular subject group with the total admissions in that group, some interesting differences emerge. In particular, for pure science and technology, each year, the proportion of total admissions exceeds the proportion of total candidates applying; for all other groups the reverse is true. There is therefore less pressure for places, and admissions to pure science and technology is presumably easier, taking the universities as a whole.

It is remarkable that this situation should exist some ten years after the concern for scientific manpower reached its height. It is evident that there has been some re-distribution of candidates as between pure and applied sciences, since over the five-year period UCCA candidates for technology have risen by 100 per cent and for pure science by only 9.6 per cent, but the anticipated swing from other faculties into these two has yet to materialise. Parents and teachers may have become resistant to what has been said and written on this subject, and claim that their concern is for the success and happiness of the individual pupil rather than for national economic need. Yet, as the UCCA Report shows, roughly 1,600 more candidates could have been placed in pure science and technology had they been forthcoming. In other faculties, although the universities admitted about a thousand more students than they had planned to do, between 4,000 and 7,000 'suitably qualified' candidates failed to gain admission to arts, social studies and the medical group. It is not possible to say how many of these would have gained entry had their choice of course been different two, three or four years earlier, but it is difficult to resist the conclusion that for a considerable number of those applying an alternative sixth form curriculum might have meant acceptance rather than rejection.

Matching Output

Common sense would suggest that there must be some system for ensuring that ambitions and prospects be kept more or less in balance. A similar need often faces the electronic engineer who, in an apparatus consisting of many stages, has to match the output of one stage to the

input of the next. He usually meets the need by a simple adjustment of his design at the end of one stage or the beginning of the next, but sometimes he also uses what he calls a matching section. In the educational problem of matching student wishes with university vacancies, all three possibilities are worth trying. The attractiveness of university courses—as seen by pupils still at school—is obviously an important factor, and some universities are already regarding their first year as a trial period for some students in order to bridge the gap. There remains the possibility that the schools might adjust their science sixth forms so that more boys and girls would be both able and willing to undertake the necessary courses of study. Such an adjustment might well be regarded as a part of the more general process of curriculum renewal which, in our rapidly changing environment, is the concern of many educationists at the present time.

Any statement of school aims, whether primary or secondary, is bound to include a statement similar to that in the recent Plowden Report: 'one obvious purpose is to fit children for the society in which they will grow up'. Although the corollary is often omitted, Plowden faces the issue squarely: 'To do this successfully it is necessary to predict what that society will be like'. It is at this point that great uncertainties arise and differences of interpretation will multiply. Keeping up with the times in education is difficult enough: moving ahead of them, even if it were desirable, raises many problems. But any glimpse into the future leads to the conclusion that schools must face a period of continuous adjustment to curriculum and methods as the years go by.

In our English secondary schools there have been many changes since the Act of 1902 came into force. But despite the growth of science teaching, the switch from ancient to modern languages and the recent growth in such subjects as economics, the pattern within the schools has perhaps changed less than might be expected, taking into account the immense changes that the last 65 years have brought about in the world outside. The Plowden Report drew attention to the fact that the topics which interest children do not necessarily fit into the subject compartments we have inherited, and at the secondary stage some new material which should find its way into the schools may be disowned by subject specialists. The alternatives are either to make room for a new subject at the expense of others or to modify the content of two or more existing subjects so that by intelligent co-operation the new need is met and the new material taught. For example, it is already evident that some familiarity with electronics is as basic to the scientist and engineer of tomorrow as was a familiarity with simple tools and materials to those of the recent past. The elementary physical principles which appear in typical science syllabuses seem to fall short of the requirement. Equally, although many thousands of amateurs enjoy constructing radio equipment of many kinds, and operating model boats and planes by remote control, activities of this kind are not thought to have sufficient craft content to justify a place for them within the school workshop. Yet by co-operation between the laboratory and the workshop, it should be possible for principle and practice to develop side by side. Again, so much is heard about computers that a secondary school course which contains only a brief reference to them would seem to be inadequate. There is a limit to the development of this topic in many schools, but some of the principles involved

may be dealt with in revised mathematics schemes, the circuit principles could become a part of the physics course, and a knowledge of the various types of 'gate' could be imparted through constructional work. Hence, in both cases, instead of a fresh subject and a fresh teacher being introduced into the already overcrowded timetable, the content of two or three subjects might be adjusted and two or three teachers could work together as a team.

Another change that can confidently be predicted in the world that children now at school will enter, is the vast increase in knowledge as a result of research and discovery. Already the volume is such that few of us carry a sufficient stock in our heads. To quote the Plowden Report again, we suspect that the pupil '. . . . if he tries too hard, will be more occupied with remembering than with thinking.' The need therefore is for less didactic teaching and for more training to find out. The facts and principles that have to be taught may perhaps be more swiftly and effectively acquired by the use of teaching aids, so that more time is available for using the expanded library facilities in the schools and for other opportunities to learn through direct experience. Yet throughout our examination system the emphasis is still upon facts and knowledge acquired, rather than upon the ability to find out, to synthesise and to create. Admittedly such abilities are more difficult to measure by the usual examination techniques, but by assessing course work over a period of time rather longer than the two or three hours of a typical examination paper, it may become possible to strike a proper balance between the possession of knowledge or skill and the ability to use it.

The growth in the proportion of pupils staying on at school has been one of the striking features of the past decade, but there are still wide differences between regions and between different occupational classes. If rising educational ambitions were more uniformly spread throughout the country and the population, much could be done to relieve man-power problems, while at the same time progress would be made towards equality of opportunity. The reasons for some families and some regions lagging behind the country as a whole seem to be in part a lack of parental interest and encouragement. To many parents who have not themselves enjoyed the benefits of an academic education, the subjects and courses offered to their sons and daughters as an inducement to stay on at school must seem to be remote from the needs of the world as they know it. The growth in the schools of activities which to them seem more relevant and worthwhile might bring about a change of attitude. Hence, courses with a sociological or technological interest might attract them where the existing arts and pure science subjects do not.

In thinking of the career prospects of the more intelligent boys and girls, whatever their family background may be, it is also important to consider their needs outside their chosen careers. Equally there is the much larger problem of the ordinary boy and girl whose life may be not less affected by changes in the world outside the school. There are complex economic and sociological problems to be solved and education for home living and for increasing leisure is at least as important as education for the world of work. Modern technology has given us the means of spanning great distances and removing physical obstacles with ease, yet the difficulty of communication between man

and man is not less than it was and obstacles to peace and freedom seem as great as ever.

In the face of all these difficulties, however, many schools are actively at work to improve their curriculum, to introduce more active methods of working and to help boys and girls of widely different abilities and backgrounds to appreciate the problems that lie ahead and to feel that they can play a part in meeting them.

Technology Exhibition

The work of some of these schools was represented at a course which the Department ran last year at the College of Home Economics in Bath. The response from the schools who were asked to co-operate was truly remarkable, and six quite large rooms were filled with exhibits of work they were carrying out. To reduce such a large exhibition to manageable proportions three of the rooms were linked together as having technological interests, whereas the others were mainly of sociological or aesthetic relevance. Thus under the heading of 'environment', the work of several schools showed what they had done in making a detailed study of a river, in one case, and a part of a forest in another. The uses of local materials of the countryside or of the seashore were also well illustrated, and two schools sent exhibits from their own museums of craft and farming implements. This historical flavour carried over into the next room, which was arranged to show how the historical background of an area could be brought home to pupils and students. In this case old pictures, post cards, fragments of stone work, metalware and furniture, together with costume models illustrated the Regency period. Stepping further back into history, visits to the local Roman sites, and craft demonstrations showing how the Roman letters were carved, illustrated the earlier settlement. It was also possible to see the extraordinary grasp that the Romans had of many relatively advanced technologies.

The contrast Roman-Regency-modern is strikingly seen in a city like Bath, and yet there is a unity in that, at each stage, the designer was trying to meet the needs—as he understood them—of the community for which he was designing. So, turning to the modern home, we see the effect of scientific technique and thinking upon the kitchen where equipment is laid out to meet the sequence of operations rather than for appearance sake, and upon furniture which takes on more and more of a structural character, introducing metal, plastics, and manufactured boards where hitherto natural timbers and upholstery materials had been dominant. The problem of home making and of home management are met early in life by many young people today, and the student working away from home is certain to have to look after himself at least for part of his course. Housing difficulties are such that many people, young and old, would consider themselves fortunate to have a permanent and adequate home of their own. This problem now looms so large that some schools have launched experimental courses, for girls as well as boys, with home making and home maintenance as the central theme introducing elements of craft, art, science and home economics. The latter subject, that ought to be of little importance in many of our more academic schools, may indeed have much to offer to the pupils of those same schools who are—boys as well as girls—likely to have to look after themselves in a very real sense shortly after

leaving school for college or university. A condensed course dealing with the problems of catering and of nutrition could be of immense benefit.

The home of today is well served with many sources of power, and indeed the housewife is often more in contact with electric motors, and with all the hazards that much-handled portable equipment introduce, than her husband. The production and the use of energy is very much taken for granted nowadays. Gartmann in *Science as History* says that all of us in western civilisation have behind us resources equivalent to half a dozen Roman slaves. Coal mines, oil wells, and now gas fields all produce energy enabling us to dispense with physical effort. The theme of power and its many uses links closely with a study of the home and was the subject of the next exhibition room. Many model engines and motors were set up for test purposes illustrating how pupils could be helped to appreciate the measurements which it might be necessary to take when studying sources of power. Also exhibited were some of the ways in which power is harnessed to meet human need, in transport, in manufacture, and in communication. Lifting and moving apparatus controlled by programme and by light beams was featured and two comprehensive exhibits showed how mathematical and scientific principles had been applied by one school in the making of its land yacht and by another in an extensive project based on the hovercraft.

Machines and equipment, like clothing, are made from materials and the study of materials can be well introduced into the curriculum. The dependence of modern civilisation on the strange behaviour of steel which, if of the right composition, can be put into various states of hardness or ductility by a fairly simple process of heat treatment, is a fascinating topic. Ways of illustrating it with fairly simple apparatus made in the school were shown at the course. Similar methods of investigating other natural and man-made materials can as easily be developed by intelligent co-operation between craft, mathematics and science teachers.

The sixth and final exhibition room was devoted to the related topic of structures, and also to illustrations of work that could be done to illustrate modern developments in mathematics. All round us today we see structures of many kinds being erected. The principles governing the strength and the rigidity of such buildings, bridges or viaducts are embodied in the design and hence in their characteristic shapes. Obviously a full study of this complex topic is well beyond the range of most pupils at school. But they can be brought to a simple understanding of some of the issues involved and some of the difficulties that have to be met when constructing things of rectilinear and other forms. Many simple but fascinating demonstrations can be given: the fact that a piece of paper, seemingly without rigidity, can carry quite substantial loads if folded into pleats or formed into tubes, is one of them. The fact that the part which a piece of timber may play in strengthening a table or a book shelf will depend upon its position as much as upon its size, is another. These facts, like the amazing strength of a bird's wing or of the stem of a roadside weed, are difficult to explain in simple terms but they should not go unnoticed.

Many of the experiments in modern mathematics lead to quite obvious links with craft and project work. Some of the gadgets that are pro-

duced are extremely simple in character, as for example in connection with binary arithmetic, whereas other curve-drawing and calculating devices can call for the most expert design and craftsmanship. Examples of both sorts were shown at Bath, and to lend point to the exercise, members of the course were able to exper ence at first-hand some of the wonders of modern computing devices when they visited local industry, and in a computer classroom where simple programmes could be set up and run through.

The common thread running through the work of this course, and through all six sections of the exhibition, was the idea of team work between teachers of related subjects, enabling them to bring home to their pupils some of the issues which do not fall neatly into the usual subject compartments. Equally, it was shown that although the designer of a bridge or of a computer may seem to be poles apart from the person who designs a kitchen, or a menu, or a piece of furniture, there are common objectives and common starting points. Each sets out to meet a need, and each has to investigate thoroughly and methodically the various possibilities; but although each is involved in a great deal of investigation, the best results almost invariably involve a vital spark of inspiration as well.

Even the range of work illustrated at Bath does not exhaust the possibilities, and other encouraging work is being taken in hand all the time. For example, in one school, what started out as a technical project activity has taken on another dimension now that some of the pupils have become interested in meeting the needs of severely crippled children in a nearby school. Again what began as an attempt to get boys and girls interested in their environment has more than once led to the setting up of an outdoor centre in what was a derelict farm or railway station: in this case the recreational need led to the technical project.

In the light of the manpower shortage, all this may seem to be of only slight importance. But, in fact, the principle being illustrated at Bath might in part help to solve this and other problems. The broader need to adapt the curriculum to the changing need must eventually lead either to a painful overhaul of the existing pattern of subjects, or to the adjustment of the content of the subjects themselves and to co-operative effort between the disciplines. Schools have proved and are proving that this can be achieved in a process of evolution rather than by a violent and revolutionary change. If this revised version of the project method could be widely tried out, supported by college and in-service training, and promoted by the various curriculum projects now in being, a means may be found of bringing schools, higher education, industry and indeed the community as a whole, into closer and lasting contact.

The Plowden Report emphasised the need for better links between home and school. Trends *reports on some successful developments.*

Bringing in Parents

The idea that parents and teachers should co-operate in the education of children is certainly not new. Dr H. E. Piggott wrote in the *Journal of Education* in 1919: 'Let parents see, hear, and judge for themselves. Bring them into the school; let them meet the teachers and learn to understand their aims and methods. Let them see their children at school, working and playing—that is, living school life. Let them see the work which has been done or that which is being done. Help them to get the teacher's point of view and appreciate his ambitions for his pupils. They will not fail to appreciate the teacher's work or to respect him as the builder of the new generation'.

Six months ago the Plowden Report said something very similar: 'What matters most are the attitudes of teachers to parents and parents to teachers—whether there is genuine mutual respect, whether parents understand what the schools are doing for their individual children and teachers realise how dependent they are on parental support'. However, the difference between these approaches is obvious. Dr Piggott was suggesting that it was only the parents who had anything to learn; the Central Advisory Council on the other hand was obviously firmly convinced that the learning needed was a two-way process.

The parent-teacher associations—one way in which parental involvement in the work of a school is achieved—received qualified support from Plowden: 'they can be of the greatest value where good leadership is given by the head. They may do harm if they get into the hands of a small group'.

Many people, parents as well as teachers, have strong reservations about the PTAs. Some head teachers tend to be afraid that the tail might start to wag the dog and some quote horror stories of packing PTA meetings with teachers to defeat awkward resolutions. Parents—often those most interested in education—may find the work of a PTA totally irrevelant to their concern. Wrote one parent in *The Teacher*:[1]

'When my first child started school, I joined the parent-teacher association in order to find out something about the school and what was being taught to my son. The first meeting of the association was devoted to Birmingham's prisons, which did not seem to me to be very relevant either to children or to their education'. He later joined the committee of his association and took an active part in its work.

There are many PTA myths and parables. Paramount has always been the idea among teachers that, without vigilance, the PTA will take over the running of the school '*—just as they do in America*'. The

[1]G.S. Somerset *The Teacher*, September 18, 1964.

Plowden Committee did not find this to be the case: 'In our visits to American schools we asked repeatedly for instances where PTAs ran the schools. Though we could not explore so difficult a question in any depth on a brief tour, we were unable to find such instances, and in general the high quality of parent-teacher relations impressed us as much as any aspect of education we saw in the United States'. It is always difficult and dangerous to draw conclusions about the institutions of another country, out of context, in the way many people have done about PTAs.

Undoubtedly the most important function of a PTA (in this country as well as in the US) is to educate parents and inform them about the processes of their children's education.

At Trosnant County Junior School on the Leigh Park Estate at Havant near Portsmouth, the headmaster John Hunt has established a particularly active PTA.

Leigh Park is a new estate for Portsmouth overspill. In such an area it would be rated a very considerable achievement to claim 30 per cent membership of a primary school PTA. Mr Hunt claims 90 per cent. He has achieved this by a vigorous policy of promotion since the day the school opened in 1956. His previous experience of running a PTA at Matlock in Derbyshire helped him. He is not worried about 'the tail wagging the dog' problem. 'We've six teachers to sixteen parents on our committee, with me as chairman', he said. 'Decisions are by simple majority. The parents could pass all kinds of awkward resolutions if they wanted—the point is they don't want to. They know that it isn't the function of a PTA to interfere in the running of the school educationally.'

But he admits that in a predominantly middle-class area, where eager-beaver committee men are thicker on the ground, there are problems—particularly for head teachers not skilled in shutting people up.

The other charge levelled against PTAs—that of creating a small elite group of parents—does not trouble Mr Hunt either. 'You are bound to get some people more enthusiastic for some things than others', he said. 'The thing to do is to involve as many people as you can in everything the PTA does. Make the committees large. Spread the jobs around. Get everyone you can doing something. You can do nothing in a PTA without money. We struggled for over a year in the red. We've got about £2,500 in the bank and other assets now and some fine capital investments—the swimming pool for instance—that really holds the Association together'.

A swimming pool, complete with changing rooms, showers and a PTA club room, was built by parents of children at the school in their spare time, and £4,500 was raised for this project alone by these same parents to provide materials. Two other primary schools on the estate have swimming pools built in the same way. One of these schools, Barncroft Primary, led the way in parental involvement of this kind, largely as a result of the work of Haydn Elliott, its headmaster. Altogether the PTA there has provided over £10,000 for the school during the past ten years.

The Trosnant pool is shared with the nearby infants' school, and it is open in the evenings and school holidays for use of the PTA members. 'Quite a number of parents come to spend their summer holidays by

the pool', Mr Hunt said. 'It's a pleasant setting with trees around and blue and yellow umbrellas set up on the lawn beside the water'.

Friendly Meeting Place

As a result the school and the swimming pool have become for parents a friendly meeting place—an essential role on a new estate where social activities are so far meagre. But there are many other ways of promoting satisfying activities.

An important aspect of the PTA involvement at Trosnant School is that parents, staff and pupils unite in several social service activities: they visit the old and sick, providing entertainments and maintain regular contact. Such activities can do much to strengthen the association's sense of purpose.

Mr Hunt believes that the informal talk about education that goes on at the PTA social occasions is influential—and perhaps more is accomplished in this way than if he had sent the parents a formal invitation to discuss education.

It has been said many times that the PTA idea will not function in working class areas. The Trosnant association proves this is not true. In fact it is because of the multiplicity of manual skills among the parents there that it has succeeded—the building team included metal workers, carpenters, lorry-drivers, surveyors, electricians and painters. The filtration and heating plant was donated by the LEA and installed by two parents who run their own electrical business.

Mr Hunt's endeavours did not stop with the building of the pool. A scout headquarters that doubled as an extra classroom, mainly used for remedial work, came next; then a Dormobile for the school's use and a garage for it. A stage was built for the school hall; tape-recorders and visual-aid equipment were bought; the hall was wired for sound amplification. The school has its own greenhouse, which pays for its cost *every* year. It also wins the school a lot of prizes at local flower and vegetable shows. Where did the money for all this come from? 'Lonnie Donnegan gave his services at the first fête we ran and 6,000 people turned up. We took £500 and the PTA never looked back from that moment.'

As far as the information aspect of the parent-teacher contact is concerned, Mr Hunt's experience is probably similar to that of any other headmaster in this kind of area. A number of meetings of parents have been organised to describe such subjects as 'going comprehensive', and there was a successful summer school for parents on teaching methods, attended by about 150 people. At least one educational meeting per term is held.

Another school that has developed an outstanding PTA is the Orchard Head Junior School at Pontefract in the West Riding of Yorkshire. The Orchard Head Estate largely houses colliery workers from the nearby North Eastern coalfield. The school, new in 1959, is the pride of the neighbourhood. The PTA here is not run by a committee and any parent who wishes to be involved in any function can do so. Weekly social meetings are run by the parents and attended by the staff, and some evening classes have been developed in the school, run by the teachers. During term a number of talks on educa-

tion are arranged for parents, on such topics as child development, children's books and the eleven plus examination.

Special arrangements for new entrants exist in the school. During one day in the term prior to entry they can go along with their parents and spend a morning in the school. When the new term begins the children starting school for the first time do not arrive on the same day as the others so that the full attention of the staff can be devoted to them.

At Bushbury Hill Primary School in Wolverhampton a parents' guild was formed soon after the arrival of the present headmaster, Mr Tart.

'We have now tried most things that PTAs do—visiting speakers, film evenings, socials and discussions', Mr Tart said, 'but our most successful venture, undoubtedly, has been the working parties which meet one evening a week in the summer and winter terms. Parents and teachers work together to produce items (mainly toys) for an annual sale. More than £1,000 has been raised in this way to buy school equipment. The guild has also helped substantially in developing a library in the school.

How deeply should parents become involved in the actual process of education of their children? Although the days are gone when parents were actively discouraged even from helping their children to read, the idea that parents should teach their children still does not find wide acceptance. Yet some primary head teachers have come to the conclusion that parents can help them in many positive ways.

At Hobbs Hill Wood Junior School in Hemel Hempstead, Mr Crawford, the headmaster, himself a specialist in remedial teaching, asked parents with children in remedial forms if they would be willing to help their children at home.

The response to this direct approach was quite startling: almost 100 per cent of parents agreed to help. But as might be expected the numbers present at later meetings held to discuss the project was not as high as this. The parents of slow readers, in classes other than remedial ones, were also invited to join the experiment and the extent of the help that they could give was explained to them. Mr Crawford prepared detailed notes for their guidance, for he felt it important that parents should begin by understanding the aims of the work, and the progress that could be expected from their children.

This idea may go further than some parents think wise. Yet it is very much to the point of J. W. B. Douglas' conclusions in *The Home and the School*, that it is the lack of stimulation by the home environment that puts children from working class homes in the remedial forms. If the home environment could itself be stimulated, much good would be achieved.

Any teacher-parent contact inevitably means more work for the teacher, often out of hours. But great gains in understanding result from such contact—understanding on both sides. Getting to know a child in relation to his or her parents may make many things clear. The root cause of a child's difficulties often becomes apparent. But there are gains even where there are no overt difficulties. The teacher benefits from knowing more about the social background and the parents gain by understanding the aims and methods of the teacher.

In a new series of articles Trends *will explore some of the concepts and methods now being used in colleges of education. The first—by a college principal—suggests some terms of reference for the debate.*

Innovation in the Colleges

K. G. COLLIER

The word innovation suggests to me a change in practice in a community, adopted with a degree of deliberation after some process of evaluation and assessment. This implies also some degree of challenge to previously held assumptions and to the *status quo*; but it does not necessarily involve any harsh break with tradition. The process may arise out of, and in turn give rise to, tensions and strains, but the implication is that the new practice will be accepted into an existing, valued tradition, and hence that it is consonant with both conservation and change. Not every change is good or acceptable; it is presumed that any that is proposed has to be assessed with discrimination and, if adopted, used with good judgment. As Dr Michael Young points out in *Research and Innovation in Education*, new fashions are often mistaken for innovations: the elements of evaluation and assessment are missing. Any middle-aged teacher or educationist is well aware of the cycle of fashion in the educational world and its harmful effects.

The importance of innovation in the above sense needs to be seen both in the context or society as a whole and in that of education. British society, seen as a whole, is, like most societies, highly conservative: change tends to be greeted with distaste and resistance rather than with zest and exhilaration. The country is, however, faced with several demands which call for radical change: balancing our foreign trade; re-building the city centres; the abolition of poverty; the re-tooling of the social services, including education, social work, the prison service, etc. Attitudes to the material deficiencies of our society have changed: resignation has given way to impatience and frustration. But attitudes to productivity and to the adaptation of traditional ways of handling our resources have not changed correspondingly. We require a more effective utilization of our resources, both human and material. At present we fall short in two respects. We fail to take full advantage of new techniques of production and communication that have become available, such as electronic controls in industry. Secondly, our systems of organization very generally fail to release and mobilize the full energies of the persons involved: attitudes to authority have altered radically but the authority structures in many spheres have remained unadapted, and acute strains and discontents are widely in evidence.

Similar comments can be made about education: we face unprecedented demands, which call for a much more effective utilization of our resources. In education, moreover, other pressures also operate: the immense increase in the school population; the 'explosion' of

knowledge; and the change in aspirations of the mass of the population, resulting in a widespread desire for longer education. Perhaps because of the very nature of these pressures, the ferment of thought and experiment in the educational system appears to be greater than in other sectors of society; whatever its deficiencies, the Schools Council now provides a machinery for measured and systematic adaptation. And again, perhaps owing to the very nature of the forces at work in the colleges of education—the threefold expansion within a few years, the recruitment of a large number of fresh minds into college staffs, the introduction of a new three-year course followed by the creation of a new four-year degree course, the broad movement of opinion represented by the growth of the academic boards—the colleges appear to be experiencing a remarkable degree of fresh thinking and enterprise. This may well, indirectly, make a weighty contribution to the development both of society generally and of the rest of the educational system.

Four main areas of innovation in the colleges may be noted.

. . . . in Teaching Methods at Child level

The colleges have done a great deal to disseminate knowledge about the use of apparatus in the teaching of mathematics, the contributions of classroom drama, the Nuffield approaches to science teaching, the new methods of teaching French in the primary schools, and many other departures from past practice. Some colleges have conducted in collaboration with schools, systematic trials of new curricula for adolescents of average and below-average ability. Current thinking suggests that this work may well lead into a full participation of the colleges in the 'development centres' for new curricula envisaged by the Schools Council and into summer schools on the pattern pioneered by Loughborough and developed in the USA., leading both to new curricula and to improved academic qualifications such as the B.Ed.

In general, the colleges have been engaged in passing on to young teachers the fruits of their own and other people's experiments in teaching methods. An important area of further development in the colleges will be research on the effectiveness of these and other new techniques. Too much experiment has in the past received no systematic assessment and it is gratifying that a new outlook is emerging.

An important question which has up to now received relatively little attention is why so many students, when they get into full-time teaching, appear to lose interest in 'new' methods and revert to less enlightened techniques. Another question follows: how does it come about that an innovation adopted and taught systematically by a college department to its students fails to take root among them? Or in other words, how do students acquire a positive and favourable attitude to change? Which leads to the further question: what are the conditions under which innovation is successfully diffused? Some innovations 'catch on' rapidly; others make no headway. Some which spread rapidly are also found to die rapidly: these might more properly be described as fashions. How are these phenomena to be explained? Some work has been done on these questions in the USA, by Benné and other followers of K. Lewin[1] and by Matthew Miles and his associates.[2] The ATCDE has carried out some preliminary studies on

the probationary year in conjunction with the National Union of Teachers and the National Association of Education Inspectors and Organizers and the University of Bristol Institute of Education is carrying out a research project on the probationary year, with the aid of a DES research grant.

.... in Teaching Methods at Adult level

The emergency colleges immediately after 1945 saw a very general adoption of discussion techniques; they also experimented with various forms of 'continuous assessment' and established the widespread inclusion of course-work grades in final assessments. More recently, experiments have moved from seminar methods to T-group techniques and syndicate methods. In addition lecturers have been extending the scope of different types of practical work with children—weekly 'group-practices' or 'study-practices', play-centres and youth clubs organized on college premises, and so on, apart from the usual 'block' practices. New methods of supervising and guiding students, as well as new methods of cooperation between tutors and teachers, are being explored. New courses have been developing in the colleges in youth work and social work. The day may be not far distant when some colleges of education blossom out into inter-professional colleges as envisaged in the Robbins Report.

In addition, the colleges have welcomed the development of closed-circuit television and given a good deal of attention to exploring its use for the students' professional training.

Here, again, a new area of work is opening up, in the evaluation of these modern techniques. There is a growing awareness that statistical 'scientific' investigations are not the only form of evaluation and that much can be gained from a detailed analysis of the aims or functions envisaged by a lecturer in carrying out a particular course, and careful records of students' actual achievements and subjective judgments. Piaget's influence on methods of investigation is becoming widespread. Even, however, when no massive researches are being mounted at vast cost, money is still required if lecturers are to have the time for the patient teasing out of aims and assembling of evidence that are necessary. The pioneer work of Bloom and his associates in the USA may provide the basis of extensive and valuable studies[3]. In addition, however, the large-scale investigation giving some statistically valid results remains indispensable and every indication suggests that there will be a big growth on this side in the colleges in the next decade.

.... in Community Organisation

It is noticeable that some colleges and schools appear to be more enterprising and fertile of ideas than others, and to be better able to consolidate their results and incorporate them into their routines. Why should this be? Burns and Stalker in *The Management of Innovation* made some observations in the electronics industry in Scotland which may or may not be true of educational institutions but are certainly

[1]Benné, K. D. and Muntyan, B. *Human Relations in Curriculum Change* (New York 1951).
[2]Miles, Matthew, B. *Innovation in Education* (New York 1964).
[3]Bloom, B. S. and others *Taxonomy of Educational Objectives* (New York 1956 and 1964).

provocative of thought and ought to be repeated in an appropriate form in colleges and schools. Their purpose was to ascertain which of a number of firms, in an industry where technical innovation is vital, were most successful in receiving, evaluating and assimilating fresh ideas. They found that the least successful were the firms with a pronounced hierarchical structure, with sharply defined spheres of duties, and a largely downward system of communication. The most successful were those with a less marked hierarchy, less sharply defined spheres of responsibility, and plenty of opportunity for exchange of views 'laterally' and for communication upwards as well as downwards. As a result, ideas sprang up and there were many points at which they could be commented upon, improved, and translated into policy. The distribution of authority and the structure of the system showed considerable differences in the two groups. One of the most striking changes in the colleges over the past five years has been the growth of the system of academic boards, in which the decision-making on academic affairs has in effect passed from the direct control of the principal to that of a group of staff, partly *ex officio* and partly elective, and chaired and guided by the principal. It could be that the new structure will offer a situation highly favourable to constructive and imaginative innovation.

There have been similar developments in the sphere of staff/student relations, which in many colleges are probably ahead of any institution of higher education in other countries. As the colleges grow, however, those which have established an effective machinery for staff/student consultation are becoming aware of the scope of the problem of adequate communication within the student body. Pioneer work is being done in a number of places but little objective assessment has been made.

One of the contributory factors in these developments has no doubt been the series of conferences on college organisation which have been arranged over the past few years by the Department of Education and Science and by the Further Education Staff College at Coombe Lodge, Somerset, which have drawn extensively on experience and concepts developed in industrial management. The report of the study group on government of Colleges of Education has also contributed fresh concepts.

. . . . in Criteria and Concepts

Finally there is the area of innovation in the values or criteria by which we judge the effectiveness of our work, and in the conceptual frameworks in terms of which we interpret our problems and our results. There has undoubtedly been a considerable movement of thought here.

The extension of sociological teaching in the colleges, though not always strong academically, is nevertheless leading to a good deal of re-thinking and re-interpretation on many college problems: the influence of Dr A. H. Halsey and Mrs Jean Floud has been considerable. The new growth of linguistic studies in educational thinking has also contributed a sharper note of rigour in some of the colleges.

This, however, may not be the most significant kind of re-thinking in progress. It may be that new concepts of the structure of the academic community may lead to a fresh approach to the problems of values.

The evidence of Professor Musgrove and others indicates that a large majority of adolescents conform pretty closely to the values of the older generation; yet it may be that the primarily coercive/kindly mode of inculcation of values which has prevailed in the past is being transformed under our eyes through a new structure of relationships between adults and adolescents, and that this is being most effectively pioneered in the colleges of education. The widening use of the 'screen arts' as a medium of education in the field of values no doubt makes its own contribution. It could even be that some of Ortega's far-sighted ideas come closer to realisation in some English colleges of education and in some American liberal arts colleges than anywhere else.

Nevertheless, this area is still wide open to exploration and experiment. The communication of civilised values between the generations, and the question of the most appropriate terms of discourse, link up with the task of evaluating our own courses and the clarification of the criteria by which we judge them. Here is a profitable field to till.

In conclusion we have to ask ourselves whether the spontaneous effort of college lecturers is adequate for the pace of adaptation which modern society appears to need. Is some more systematic method required for keeping problems and potential innovations under review in a college staff? Some colleges are at present oppressed with the sense of rapid change as a result of an excessively high rate of expansion; yet it is only too clear that English society is not adapting itself sufficiently quickly and positively and that the colleges have a special responsibility for developing in their students a favourable yet discriminating attitude to change. How far should the academic board of a college concern itself specifically with problems of innovation?

It seems clear that the dynamic attitude to change found in many colleges may well transform these institutions and radically change the schools in the next generation.

The training of high school principals in techniques of administration is receiving considerable attention in the USA. The subject is of concern in this country and Dr Birchenough HMI has supplied an introduction relating the article to the British scene.

Simulated Situations

MEREDYDD G. HUGHES

This article appears at a time when interest in the question of training in school management for head teachers and senior staff is clearly very great. Valuable work in the field is already being done within the universities and by bodies such as the College of Preceptors, often using the techniques described in the article, but there is an increasing pressure for an extension of the scale of this effort. Many senior teachers are involved in reorganisation, and for all head teachers the increasing complexity of school organisation is posing more difficult problems.

The Secretary of State recently announced that he was asking HM Inspectorate to give high priority to the development of courses in school organisation and management for heads and senior staff. Consultations are still in progress with representatives of the teaching profession and local education authorities, and the exact nature of the courses to be run cannot be settled at this stage. It is probable, however, that the main effort by the Department of Education and Science will be put into an extension of the present short course programme, mainly by organising regional courses, run in collaboration with groups of LEAs, and by offering assistance with staffing and the preparation of material for courses run by authorities in their own areas. The likely pattern is of short intensive courses, followed up by tutorials and discussion groups organised on a local basis. The kind of technique described in the article would lend itself well to this approach: one element of the courses could usefully be a consideration of some examples of simulated situations and some of actual situations discussed by those directly concerned.

It is probable that there will be a continuing need for longer courses in school organisation and management. There are already some interesting examples of such courses, in which the approach described in the article has been shown to be useful, and the scale of provision by university institutes of education and by other bodies may be expected to increase. It is clearly desirable that there should be a continuing exchange of views and information between all concerned with the development of such courses.

The construction of theoretical models of complex real situations is a familiar part of the recognised methodology of natural science which has also, in the guise of simulated situations, become a major interest of social scientists.

In recent years there has been a striking parallel development of simulation as a new and powerful instructional technique. Its value in

a particular, and rather specialised, field of activity had been long recognised and experienced—or endured—in countless army exercises and naval manoeuvres. The *kriegspiel* of Prussian officer training, the realism of modern civil defence exercises, the management games used in training business executives and the whirling space chambers within which astronauts practise their extra-terrestial skills are all examples of the use of simulated situations for teaching purposes.

The same idea has been adapted during the last decade to the teaching of school administration. Realistic models of key educational roles, devised by the US University Council for Educational Administration (UCEA), are now in use in courses for school principals and local education officials at 90 or more American and Canadian universities. They have inspired similar developments in Australia and New Zealand and, latterly, in the United Kingdom, which show promise of leading to a new interest both in the academic study of educational administration and in the practical preparation of educational leaders.

The vigorous American initiative in this field is, to a considerable extent, an incidental outcome of an ambitious research programme begun in 1957 and carried out jointly by Teachers College of Columbia University and Educational Testing Service under a grant from the US Office of Education. The main aims of the DCS Project, (the initials standing for 'Development of Criteria of Success in School Administration'), were to investigate the administrative behaviour of elementary school principals and to establish, if possible, a set of principles which would help in their selection.

An essential feature of the methodology of the project was the careful construction of a fictitious situation in which the behaviour of different administrators could be observed and meaningfully compared. Elaborate background information, largely based on a real school and its environment, was assembled in 600 pages of typescript and about five hours of films, tape recordings and film strips with taped commentaries. Rather more than 200 elementary school principals from various parts of the United States were then chosen as guinea-pigs and their agreement—and that of their school boards—obtained to their participation in the investigation.

All preliminaries completed, the principals were brought together in groups of about twenty during 1958–59 for a week's intensive activity at conveniently situated, but secluded, centres. The first day and a half were spent in working through the documentary and audiovisual material relating to the fictitious Whitman Elementary School of Jefferson Township in the hitherto unknown State of Lafayette. For the rest of the week the participants were invited to take on the role of Marion Smith, newly appointed principal of Whitman, and the reactions of each of them to standardised situations were carefully recorded. An analysis of the responses, relating them to the results of an array of objective tests and subjective evaluations by superiors and subordinates, is given in the project report, *Administrative Performance and Personality*, which also brings out strongly the potential value of the simulation in the preparation of school administrators.

The latter point has been well taken. It is estimated that, since 1959, over 18,000 practising administrators and graduate students have served an apprenticeship on university courses as principal of one or other of the simulated schools made available through UCEA (Uni-

versity Council for Educational Administration). Using much of the original materials, the Whitman Elementary Simulation has been followed by the Jefferson High School Principalship, and there have been further extensions to the local authority roles of school superintendency and the assistant superintendency for business management. Shorter exercises have also been devised, requiring a minimum of background information, related to the fairly simple administrative problems of Shady Acres Elementary School of Midville, a small high school supposedly situated in a Midwestern community.

At Ohio State University recently I had the interesting experience of participating as a guest in a 'simulation workshop' for secondary school principals, taken by Professors Laughlin and Anderson and using the UCEA materials. I had previously observed the corresponding courses for elementary school principals at Boston University and Southern Illinois University.

Need for Detail

When confronted with the formidable documentation of the various Jefferson simulations, my first reaction was to question the need for much of the detail. It was clear, however, that my doubts were not shared by the course members. They appreciated being given the specifics of a concrete situation in depth, and I could see that their group discussions, based on the given material, were a valuable comparative exercise. A head of some experience wryly remarked at the end of a discussion of the 150-page School-Community Survey that he was beginning to know Jefferson in a more significant way than his own school district. My final impression was of the clear and consistent picture which had emerged during the course of the total professional situation of a particular head, giving to the novice a helpful indication of the kind of perspective and detailed knowledge of school and community which a principal might appropriately try to achieve.

Both the elementary and secondary simulations which I observed made imaginative use of audio-visual aids. An introductory film gave a general view of the educational system of Jefferson, while others presented specific situations for appraisal, such as classes being taught by probationary teachers and an ineffective principal having a stormy session with a difficult member of staff. The tape recordings included a parent-teacher consultation, a PTA meeting, various staff discussions and the interviewing of a candidate for a staff appointment.

The most exacting part of the workshop experience consisted of the so-called 'in-basket exercises.' Each participant, assuming the role of principal, was given a full in-basket of accumulated paper work and was expected to take all appropriate action within a given time. Replies to letters and memoranda, when applicable, had to be fully drafted and a record made of other action taken, while a 'reasons for action' form was to be completed for later discussion with tutors and other course members.

To give examples from the secondary course, the principal finds in his in-basket several notes from members of staff, including a resignation for domestic reasons, an angry protest against allegedly oppressive supervision by the complainant's head of department and a request from the school librarian that teachers should not send pupils to the

library simply to be rid of them. There are several letters from parents. A letter of warm appreciation of last week's musical evening may, or may not, be relevant in replying to an official request for confirmation that an inspectorial visit is required to evaluate the school's music teaching. There are messages of varying urgency from the local authority, including a letter from the superintendent requesting the principal, because of a complaint from the mother of a 'drop-out', to review urgently the school's guidance provision and curriculum in industrial arts to determine their adequacy for non-college bound students. This led to considerable discussion in the subsequent seminar.

A second in-basket includes an indignant letter concerning white and coloured teenagers congregating and misbehaving in a public square at night. A catholic parent writes to complain that the mathematics mistress visited her home to offer protestant literature to her impressionable daughter, while another parent objects to the school's extra-curricular activities on the grounds that they intefere with his family's social engagements. The art mistress has lost money and suspects one of the cleaning staff, while the head of the science department finds that he has tripped up in ordering special microscopes and has an unorthodox solution to offer. In short, the in-baskets provide a concentrated selection of the real life problems of administrating a typical American high school. As an outside observer I found that the varied responses of the course members gave me a fascinating and privileged glimpse of the decision-making process and the factors on which decisions are actually based.

In the group discussions it was interesting to note that the more significant interchanges were concerned with differences of value judgment rather than with variations of administrative procedure. The case of the mathematics teacher, for instance, whose proselytising activities led to parental protest, produced a clear division between those who stressed the mistress's right, out of school hours, to propagate her religious or political views as she pleased and those who thought that professional considerations might qualify that right in the case of her own pupils. Sometimes a conflict was inherent in the simulated situation itself, as in the case of the bellicose parent, Jonathan Brooks, whose whole outlook was revealed to be at variance with that of the school. The in-basket post mortems brought value judgments sharply into focus, thereby identifying a major source of conflict in administration while giving tutors an opportunity of illustrating the relevance of a sociological perspective.

High Motivation

The personal involvement and high motivation of course members contrasted significantly, I was told, with the attitude exhibited in traditional American courses on school administration. Several principals mentioned to me the constant challenge to professors to relate theory to practice which is involved in a simulated situation set out with authentic detail. Professors on their part welcomed being able to exemplify abstract sociological concepts in terms of a common fund of empirical data. They claimed that their students, through being exposed to a wide range of issues against a complex background of information from which the relevant factors have to be determined,

were encouraged to look at the total picture and to extend their awareness of the range of variables to be considered in solving complicated problems of organisation.

No one claims that simulation is a complete answer to the problems of administrative training. Dr Culbertson, Executive Director of UCE, has written of the continuing need for a careful analysis of the apparent strengths and problems of the simulation method of instruction. The first workshops, held in 1959–60, were systematically evaluated, using such methods as objective tests, joint student-staff appraisal on the final day, observations by independent evaluators and follow-up studies six months later. Results were generally favourable and it was this experience which led UCEA to make the materials generally available.

Professor Luvern Cunningham of Chicago, writing in the light of his experience as director of one of the early workshops, has observed that simulation allows students to look upon their own behaviour in a non-threatening setting, comparing their own responses with those of others. He makes the further point that students have an opportunity 'to try out various ways of solving problems and test the appropriateness of their suggested solutions in the presence of people who can judge the efficacy of their actions.'

Inherent in these advantages is the obvious limitation that the realism is only partial. The fact that the student knows that his purported administrative acts are being publicly performed in the presence of professors and fellow principals unavoidably detracts from the sense of actuality which the simulation is intended to provide. There can be no guarantee that workday administrative decisions in less exposed circumstances will be of the same quality.

Possibly a more serious defect, as Dr Culbertson himself remarks in *Preparing Administrators: New Perspectives*, is that the simulated situations so far devised are directed more towards management training than to the dimension of leadership. It is difficult to envisage a standardised simulation of conditions for creative leadership, for initiating policy and formulating educational purpose in a changing society. These are long term preoccupations which cannot easily be captured in the transient cross-sections of school life represented by in-basket exercises.

But while it must be recognised that no simulation can fully recreate the principal's role as carved out in the life of an outstanding headmaster—and what is left out may well be the most important part—it is still true that simulated role-playing can be of considerable practical value. In particular it has helped many heads and aspiring heads to develop skills of delegation and supervision, to conceptualise and generalise their problems and to learn about their own competency in relation to the day-to-day demands of school administration.

A major developmental project now in progress is the revision and rewriting of the whole range of simulation materials with the help of a grant of 68,000 dollars from the US Office of Education. The revision is being undertaken partly because material produced eight or so years ago is rapidly becoming dated as new problems and issues arise to tax the wisdom and ingenuity of school principals and education officers. Fresh documents, tapes, films, film strips and in-baskets are being prepared for a new 'Madison School District,' and the necessary data

have already been obtained from surveyors of the district which was originally used for the Jefferson simulations.

A second reason for revision is a desire to build into the system a mechanism to provide 'feedback' on the basis of the student's previous decisions. It is felt that the simulation would be improved if the student had to handle the repercussions, foreseen and unforeseen, of the decisions he makes. In practice feedback has been provided in many workshops by *ad hoc* role-playing, or even by instructors writing individual letters or making phone calls to course members in reply to their in-basket decisions. A more standardised and systematic approach becomes available if programming is used, branching techniques being particularly relevant when several decisions are possible. Progress is being made and it is planned that the new materials should be ready by the summer of 1967.

Bringing in Computers

Looking beyond the Madison Schools Project there is a long term prospect of introducing computers, first of all with very simple problems but gradually in a more sophisticated manner. Two experimental models have already been developed, one concerned with staff selection and the other with the relation of student enrolment to building resources. The computer programme is written in such a way that the student can obtain items of information required for decision-making by asking appropriate questions of the computer. When a sequence of decisions is involved the computer adjusts data to take account of earlier decisions, thus providing automatic feedback. Programmed simulation and in-basket feedback may thus be regarded as steps towards the greater scope and flexibility of computer-based instruction which may now be seen as the logical culmination of the use of simulated situations in the preparation of educational administrators.

I returned from the United States convinced, firstly, that these new techniques have much to offer as a part of the in-service training of our own heads and administrative officers; and secondly, that we would do well to give attention to the growing American literature on educational administration with its new emphasis on the insight to be obtained from the social sciences.

As we profit from American experience we might also keep in mind the recognition by many of their foremost thinkers that there are aspects of leadership which cannot ultimately be reduced to a simulation exercise or computer programme, a point highlighted for me in a lecture entitled, 'The humanising of knowledge and the education of values', given by Professor George Axtelle to the Southern Illinois workshop. This is an emphasis which was seldom absent from our discussions of the many problems of the Jefferson schools and which is likely to be of no less importance in the computer aided, simulation based future of the in-service training of school heads and other educational leaders.

Teaching English as a second language poses problems in many countries. In Malaya there are some special additional features.

English in Malaya

J. J. SULLIVAN

Two snapshots. The tropical sun beats in through the open door of a classroom that is little more than a shed. An Indian youth stands at the blackboard laboriously producing a crude drawing of a cow under a tree. Forty eight-year old Tamils sit upright in their backless desks, a thumbed text-book before each. They are unnaturally quiet and attentive, their eyes fixed on the teacher and his handiwork. We are in a Tamil-medium primary school, one of three on an enormous rubber estate in Malaya. These children began learning Malay as a second language when they started school at six years. Now, at eight, they are beginning their third language, English. The blackboard drawing is finished; the dialogue begins:

'The *cow* is under the tree. Repeat'.
'The tree is *over* the cow. Repeat'.
'The book is *on* the desk. Repeat'.
'My hand is *in* my pocket. Repeat'.

'Prepositions *are* important', the young teacher tells me. He himself failed his examination and had to leave school: hopes to take the examination again next year: meanwhile, he teaches. At last the lesson ends and the children come to vivid life. They go *through* the door and play *under* the tree.

Now we are in a different classroom—large, airy and pleasant. A young Chinese teacher, recently graduated from the University of Malaya, is reading *Anthony and Cleopatra* with the VI form. This consists of 30 boys and girls, mostly Chinese, drawn fron local secondary schools, who have gained entry by passing the highly competitive VI form examination. The teacher has been talking of Anthony's tears. A serious-looking boy stands and says:

'If Anthony cried, he was no man. Tears are a woman's prerogative'. The teacher seeks to persuade him otherwise, with neatly chosen examples. The boy will have none of it. 'If Anthony cried', he says firmly, 'far from being a hero, he was no man. Crying, I say, is effeminate'.

The teacher soldiers on, appeals to the class which appears divided on the issue. Finally, a boy at the back (another Chinese) rises slowly, waits for silence (in a manner that will surely one day be seen in Government House) and says:

'Last week I read a book about Winston Churchill. There it said that during the bombing of London, Churchill went one morning to a bombed area, and stood among the ruins and' (marked emphasis here) '*the tears ran down his face*! We all know that Winston Churchill

was a man: yet he cried. Therefore,' (pointing at the first speaker) 'Yang is wrong!'

General applause. Teacher smiles. The orator sits down with a self-satisfied air.

Yang, quite unmoved, rises slowly to his feet, his spectacles glinting. 'That proves nothing. If Winston Churchill cried, then *he* was unmanly, like Anthony'. He sits down. The teacher decides to move on, and the reading of the set book continues.

In between these extremes, the Tamil children in a dingy shed on a remote rubber estate and the sophisticated sixth formers in a large urban school, I encountered in Malaya English classes at every level of quality. In primary schools I saw some splendid work to offset the dreary rote learning that still survived in all too many places. In one secondary school, I saw sixth formers taking down from the teacher's dictation long slabs of critical commentary which the teacher had herself copied from a work of criticism: in another, I saw second year pupils in a public speaking contest, organised by the prefects, addressing the whole school, without notes, in fluent and persuasive periods. In yet another, I witnessed a remarkable performance of *Othello*, in which Desdemona was played by a Chinese girl, Othello by a Sikh and Iago by a Singhalese. The cast were word-perfect—intonation and inflexion alone betrayed them.

That such achievements should be possible in this multi-racial, multi-lingual society, was to me a source of wonder. The mighty effort that is afoot to raise standards all round, in the face of the fantastic difficulties presented by the very variety of languages and races, can only command one's admiration.

And I found so much to admire in what I saw during a recent spell of six months spent roaming through the primary and secondary schools and training colleges of Malaya. (Not Malaysia: Saba and Sarawak were not visited: Singapore was, but it is no longer part of the Federation). During this tour, I saw something of the teaching of English in most of the states of the pensinsula. Since, however, this was not the main object of my visit, my experience of English teaching was wide, rather than deep, and the notes that follow are those of an interested and sympathetic observer only: they are not in any sense to be regarded as an attempt at a critical assessment.

Linguistic Problem

The educational situation in Malaya must be unique in its complexity. Malaya is a multi-racial nation of some eight millions with nearly as many Chinese as Malays and a smaller but significant number of Indians and Eurasians. This presents a linguistic problem which the Malaysian Government, in its endeavour to weld these different racial communities into a single nation, has clearly to tackle through education. In 1965, according to official statistics, there were in Malaya, 4,706 primary schools with 1,234,505 pupils, and 967 secondary schools with 345,908 pupils. (The explanation of the discrepancy in numbers of pupils between primary and secondary will be more apparent later). Pupils in the primary schools study in the medium of language chosen by their parents and of these there are four: Malay, Chinese, English or Tamil. When they enter the secondary school, the

choice of medium is two: Malay or English. Complication does not end here, however. Until 1965, the primary school stage ended with a kind of Malayan '11+ examination'—the promotion examination—fraught with even more dire consequences for the less able than for their peers in England. The 30 per cent of pupils who passed went on to pursue an academic course in the secondary schools: for the remaining 70 per cent, education ended—apart from the few whose parents could pay the high fees at private schools, and those, also few, who went to the trade schools or the 'continuation schools' (which did not prepare for further education or employment). In 1965, the promotion examination was abolished, the 'continuation schools' discontinued and admission to secondary education became open to all. The expanded secondary schools, with a curriculum widened to include 'practical, pre-vocational subjects', were dubbed comprehensive schools. (familiar term to English ears!)

When I arrived in Kuala Lumpur in January 1966, the educational system was groaning under the strain of coping with the vastly increased numbers of secondary pupils of the whole range of ability, with massive accommodation problems and even greater problems of teacher supply and of teacher training. Much more could be said about this remarkable situation—and even more about the resilience with which teachers taught and seemed to bear up—but enough has been said, I hope, to indicate the complexity and difficulties, as I encountered them. Against this background, I attempt to sketch in my impressions of the teaching of English.

English—the Lingua Franca

At present, English is, with Malay, a compulsory subject in all Government and Government-assisted schools. Although the languages and cultures of other communities are to be preserved and sustained, Malay is being increasingly promoted by the Government and in 1967, ten years after *Merdeka*, it is to be the sole official language. It would appear unlikely, however, that this will result in any marked falling off in the widespread use of English. The visitor cannot fail to note the employment of English as the *lingua franca* of the educated classes, its predominant position as the medium of communication in the press and books, in the cinema, radio and television, and in international dealings at all levels. Lectures in the University of Malaya are in English.

The position of English in the schools may be put in Orwellian terms: all pupils are taught English but some are taught more than others. Pupils in the English-medium and Malay-medium primary schools are taught English from the outset (age six); those in the Chinese-medium and the Tamil-medium begin learning Malay as a second language at six years and start English two years later, in standard three. At the end of the primary stage all pupils may now proceed without a selection examination to the secondary school, either Malay or English medium. Clearly, those pupils who come to the English medium secondary school from an English medium primary school have a head start in English Language on all others. At the other extreme, pupils from Chinese and Tamil medium schools, who arrive with two years' less instruction in English Language, also now encounter English as a medium of instruction for the first time. An

attempt is made to cope with this problem by putting such pupils in a remove form where it is hoped that intensive instruction in English will help them to take their proper place in the main stream in the second year. Added complications arise from the fact that some pupils come from homes where English is commonly used: others meet it only at school. The latter often make slower progress in the English medium primary and secondary schools because of their relative backwardness in the language used as the medium of instruction rather than because of any necessarily inherent lack of intelligence. In one large English medium primary school that I visited, the race distribution was: 94 Malays, 661 Chinese, 214 Indians, 40 Eurasians. I found that those of all races who spoke English at home were usually in the upper streams and the others in the lower. A similar pattern was repeated in the English medium secondary school to which they proceeded.

A new English syllabus has recently been introduced, together with two teachers' handbooks, one for primary schools and Remove Forms and one for secondary schools, which offer useful advice and guidance in the implementation of the syllabus. New textbooks, based on the syllabus, are beginning to appear, but no series has yet been completed. Faced with so much that is new to them, teachers, both the experienced and those just entering the profession, will need much help in carrying out the demands of the syllabus.

In discussions with teachers, education officers and Federal inspectors, I was often told that the standard of both teaching and attainment in English—as in other subjects—is declining. This was attributed to the combined effects of the influx into the new comprehensive schools, overcrowded classes, and the shortage of teachers. In the relatively small sample that I was able to observe, I certainly saw some poor teaching, but this was offset by much enlightened work that I saw elsewhere. It is true that the sixth form pupils enjoy the ministrations of the best qualified teachers, are themselves the end-product of a highly selective process, and represent less than one per cent of their age-group. But this serves only to underline the urgent need for an increase in the number of sixth forms, for many able pupils who fail to get a sixth-form place have their path to higher education and the professions effectively barred. (Have we not heard something similar in England in recent years?)

Generalisation from such limited experience as mine would be valueless: the only one generalisation that seemed possible was that the admission of the whole ability range to the secondary schools is likely to have a lowering effect on standards in the short run.

The long run is a different matter. Such is the energy with which the various problems to which I have referred are being tackled, such is the eagerness of parents and the older pupils for more and better educational opportunities, that I find it difficult to believe that in the long run standards will not rise. But, in the teaching of English, I am sure that there can be little advance (apart from the small sixth form elite) without an enormous improvement in the provision of books in number and in quality.

Library Science

At an early stage in the learning of English, pupils should have access

to a varied supply of reading material suited to their standard of attainment. In the primary schools that I saw, this often amounted to nothing more than a reader to accompany the course book and even in those schools where something more than this was available, teachers often mentioned the difficulty of persuading their pupils to read at all. This complaint was frequently echoed in the secondary schools. This led me to pay some particular attention to the provision of books other than text books, i.e. to school and class libraries. Here I found a curious position. The Ministry of Education embarked upon the establishment of school libraries in 1962. Advisers came from overseas, courses in 'library science' were held for over 200 teachers in all states in the country, classrooms were adapted to provide library rooms, and in 1964 an excellent *School Library Manual* was published by the Ministry. In my own visits to schools, the effect of all this work and enthusiasm was plain to see. All the secondary schools had a collection of books for loan and reference, usually housed in a room adapted for library purposes: the books were properly classified, a standard issue system was in use, and arrangements existed for library periods for all classes. In short, the books were organised on sound lines and the pupils had opportunities for borrowing and consulting them. But all too often I found that the stock, of perhaps several thousand books, was a haphazard collection, including many items that were obsolete or beyond the range of the pupils or otherwise unsuitable. Frequently, the number of books that were actually of value to the pupils was relatively small so that the whole apparatus of 'library science' was applied to a hopelessly inadequate collection. In these circumstances, it did not seem to me surprising that pupils 'did not read'.

By contrast, and again not surprisingly, in the few well-stocked libraries that I saw in both primary and secondary schools, I found pupils who were developing the reading habit and learning both how to read books for enjoyment and to use them as tools of learning. One such school library was of quite outstanding quality in every respect, as good a school library as I have seen anywhere, and I encountered others that were aspiring to this condition.

Books are bought with library fees collected from the parents. It seems to me significant that the few good, well-used collections that I saw were in long-established schools in the more prosperous parts of the country where parents can more readily pay the library fees and generous benefactors are more likely to be found. Any large-scale advance in book-provision over the whole country would appear to demand a *per capita* grant made from central funds so that even in the poorest areas a minimum standard of library provision can be made and maintained.

Given the necessary funds, there is the question of their wise expenditure, the question of book selection. This in turn requires someone on the school staff, with some training, to act as teacher-librarian. Many teachers have now attended in-service courses, as I have noted, and more will doubtless do so. It appears, however, that no provision is yet made for teacher-librarians to have any time free from teaching duties to attend to the library. (I sometimes found the library room locked up because no-one was available to supervise). The teacher-librarian needs help in the selection of books for the library. Some brief suggestions are available in the *School Library Manual* but much

more help in book selection is needed. The notion that several thousand books—*any* books—constitutes a library, needs to be dispelled; the kind of books they are and their suitability for the pupils who are going to use them must be recognised as requirements of fundamental importance.

A final snapshot. Two fifth-form girls, one Chinese, the other Malay, chatting to the English visitor in the shade of an enormous tree in the school grounds. They both want to become teachers. The Malay girl wants to teach home economics. The Chinese girl hopes to win a scholarship that will take her to an English university. There she would read for a degree in English. 'Why?', I ask:

'Because I could then come back to Malaya and teach English to the sixth form. I cannot imagine a more enjoyable occupation'.

'Teaching home economics could be just as enjoyable' interposes the Malay girl.

I hope they achieve their ambitions, but the shadow of sixth form entrance lies across the path of both. They are not deterred by this: and perhaps this calm acceptance of a hard road to their objectives is not surprising. Both talked to me easily in a tongue which was the third language of one and the second language of the other. And I, who speak neither Chinese nor Malay but fancy I know something of the difficulty of English, was humbled.

Some interesting features of sixth forms emerge from a survey in the Northern Division. The results, summarised in this article, provide information on subjects studied, the flow of students into higher education or into employment, and the attitude of sixth formers to the choices before them.

Sixth Form Survey

In the late spring and early summer of 1966 a survey of sixth forms in its Northern Division was conducted, and the findings formulated, by HM Inspectorate of England and Wales. The survey, made in connection with the Regional Plan for the North, was carried out with the close collaboration of the schools and the 14 local education authorities[1] in the Division.

It was intended that the survey cover 110 schools which could be classified as maintained grammar schools (including grammar/modern and grammar/technical and direct grant schools). The time available for the survey and hence its objectives were limited. A questionnaire to the headmaster or headmistress of each school covered by the survey asked for, over the years 1964 to 1966, numbers in the sixth form; the numbers entered for each subject at A level; and the higher education or future careers of pupils leaving in 1964 and 1965 and the prospective higher education or careers of those leaving in 1966.

Replies were received from 100 schools (91 per cent of those canvassed). Those which did not complete the questionnaire are unlikely to affect the general picture excepting only the totals. Independent secondary schools were not included. Nor were replies from some half dozen newly formed comprehensive schools or school recently reorganised as comprehensive.

The period of the survey was chosen to give an up-to-date picture but, since 1964 and 1965 were years affected by the 'bulge', deductions, particularly of the growth of sixth forms, might be misleading.

Growth of Sixth Forms

The total number of pupils in the schools returning the questionnaires and the number in the sixth form are given in Table 1.
The effects of the 'bulge' can be seen by the small variation in the totals for 1965 and 1966. For that reason the underlying growth in the number of sixth form pupils is probably different from that indicated

[1]Northumberland and the county boroughs of Newcastle and Tynemouth; Durham and the county boroughs of Gateshead, South Shields, Sunderland, West Hartlepool and Darlington;
North Riding of Yorkshire and the county boroughs of Middlesborough; Cumberland and the county borough of Carlisle; and
Westmoreland.

Table 1 Totals of all pupils and of sixth form pupils: January 1964, 1965, 1966

	1964			1965			1966		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Pupils in schools	27,372	28,501	55,873	28,003	29,463	57,466	28,526	30,182	58,708
Sixth form pupils	4,575	3,930	8,505	5,014	4,310	9,324	5,130	4,464	9,594
Sixth form as per cent of total	16.7	13.7	15.2	17.9	14.6	16.2	17.9	14.7	16.3
Percentage increase of sixth forms on 1964							12.1	13.6	12.8

by the 12.8 per cent increase shown in the two-year period, January 1964 to January 1966.

Size of Sixth Form

The size of the sixth form varies with the character and social background of the locality, the organisation favoured by the particular authority and the tradition of the individual school. A summary of the distribution of size of form is given in Table 2.

Table 2 Size of sixth forms: January 1966

Number of pupils in form	Under 25	25 –49	50 –74	75 –99	100 –124	125 –149	150 –174	175 –199	200 –224
Number of Schools*	3	8	17	19	31	12	3	3	2

*Of the 100 replies received, one school did not give the total of its sixth form, and another recently established, had not yet formed a sixth form.

Half of the schools have sixth forms within the range 75-124 pupils, 80 per cent fall within the range of 50-149 pupils in the sixth forms.

The size of the sixth form will also have an effect on the choice of subjects that a school can economically offer. The smaller the school the fewer the options one would expect to see offered. Because the choices available but not selected were not included, the survey could not be used to test this. However, some indication may be contained in the column of Table 3 giving the average number of subjects for schools of differing size. The survey also showed that school policy is important in deciding the number of options available—some of the larger schools for example have fewer subjects studied than some schools in the middle range.

Table 3 also shows the burden on schools of providing tuition in subjects for one or two pupils. Music and art, all languages other than French, and the craft subjects are particularly vulnerable.

Table 3 Average number of subjects to A level: 1966

Size of Sixth Form	Number of Schools	Average Number of Subjects	Number of Cases with only 1 or 2 entrants for a subject*
50– 60	10	11.8	25
100–110	12	14.4	20
140–150	6	17.2	17
185–217	4	18.3	13
		Overall average	
Totals	32	14.6	75†

*Does not include 18 cases in schools in lower three bands where 1 or 2 pupils entered for a second mathematics subject.
†Of the total 93 instances there were 52 with only one pupil, 41 with 2 pupils.

Sixth Form Courses

The tradition of courses taken in the sixth form still remains that of three subjects chosen from English, history, geography and French or from mathematics, physics, chemistry and biology. These eight subjects, as is shown in Table 4, accounted in each of the three years for 80 per cent of all subjects taken at A level. A slight trend away from the 'science four' is, however, indicated.

Table 4 Entrants at A level for the eight most popular subjects

Subject	Entrants at A-level 1964	% of Total No. of Entrants	Entrants at A-level 1965	% of Total No. of Entrants	Entrants at A-level 1966	% of Total No. of Entrants
English	1,192	12.1	1,509	12.3	1,562	13.0
History	874	8.8	1,134	9.2	1,119	9.3
Geography	776	7.9	1,072	8.7	1,017	8.4
French	733	7.4	923	7.5	872	7.2
Maths.	1,330	13.5	1,669	13.6	1,647	13.7
Physics	1,342	13.6	1,573	12.8	1,515	12.6
Chemistry	1,134	11.5	1,315	10.7	1,228	10.2
Biology	572	5.8	702	5.7	745	6.2
Total	7,953	80.6	9,897	80.5	9,705	80.6

The tradition is, nonetheless, weakening with a growth in the proportion of pupils taking 'mixed' courses (i.e. pupils taking subjects in both maths/science and arts groups). A few heads make the point that 'mixed' courses are more favoured by pupils who are aiming at a target lower than university entrance. The more usual combinations are mathematics with arts subjects (economics is included here) for those with further training in social sciences in view; and biology plus arts subjects especially for girls with a career in nursing or medical auxiliary services in mind. Information from the 54 schools who returned the full details necessary show the recent trends.

Table 5 Numbers taking maths/science, arts and mixed courses*

	1964			1965			1966		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
No. taking Maths/Science Courses	1,429	369	1,798	1,571	336	1,907	1,563	346	1,909
% of Total	55.8	18.7	39.7	52.2	17.0	38.2	50.6	16.6	37.0
No. taking Arts Courses	853	1,326	2,179	1,046	1,341	2,387	1,060	1,403	2,463
% of Total	33.3	67.3	48.1	34.7	67.7	47.8	34.3	67.5	47.6
No. taking mixed Courses	281	275	556	394	303	697	467	330	797
% of Total	11.0	14.0	12.3	13.1	15.3	14.0	15.1	15.9	15.4
Total	2,563	1,970	4,533	3,011	1,980	4,991	3,090	2,079	5,169

*The definition for science and arts subjects in Form 7 Schools is followed.

During the three years covered by the survey the percentage of pupils taking arts courses has remained relatively constant whilst the proportion of those taking mixed courses has increased at the expense of the proportion taking maths/science courses.

An interesting light is cast on the attitude of girls to mathematics and science subjects when the proportion of science subjects[1] to arts subjects[2] taken by girls is compared for mixed schools and girls schools.

In 1966 the proportion of science subjects to arts subjects taken at

[1]Physics, chemistry, biology, botany, zoology.
[2]English, history, geography, languages.

A level by girls was 1 : 4.4 in mixed schools and 1 : 2.7 in girls' schools. The corresponding figure for the proportion of mathematics to arts subjects are 1 : 16.9 and 1 : 6.7. It may be that girls avoid competition with boys in mathematics and science subjects or, more kindly, that in mixed schools teaching is slanted to the boys' interests.

After Leaving School

For the majority the sixth form course is preparation for higher education. Threequarters of the boys and four fifths of the girls move on to a full-time course in higher or further education. The final table shows for 1964 and 1965 the number of pupils who left school to continue their full-time education or to enter work directly and for 1966 shows the intention of the sixth formers who were, at the time of the survey, still at school. The figures for 1966 will therefore contain a number (probably about 9 per cent) of aspirants to higher and further education who would be unsuccessful.

Table 6 Future occupations of sixth form leavers 1964 and 1965: intentions of leavers 1966

	1964			1965			1966		
Numbers of Sixth Formers leaving to enter:	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
University	898	409	1,307	1,042	540	1,582	1,434	750	2,184
% of Total	46.7	23.2	35.5	43.7	24.7	34.6	57.8	36.0	47.8
College of Education	274	840	1,114	329	1,027	1,356	320	1,009	1,329
% of Total	14.3	47.6	30.2	13.8	47.0	29.7	12.9	48.4	29.1
College of Technology[1]	172	58	230	258	60	318	223	47	270
% of Total	9.0	3.3	6.2	10.8	2.7	7.0	9.0	2.3	5.9
College of Further Education[2]	90	87	177	110	130	240	94	57	151
% of Total	4.7	4.9	4.8	4.6	5.9	5.3	3.8	2.7	3.3
Other Full time Education	25	24	49	46	32	78	26	17	43
% of Total	1.3	1.4	1.3	1.9	1.5	1.7	1.0	0.8	0.9
All full time Education	1,459	1,418	2,877	1,785	1,789	3,574	2,097	1,880	3,977
% of Total	76.0	80.4	78.1	74.9	81.8	78.3	84.6	90.2	87.1
Employment	461	346	807	597	396	993	383	205	588
% of Total	24.0	19.6	21.9	25.1	18.2	21.7	15.4	9.8	12.9
Total	1,920	1,764	3,684	2,382	2,185	4,567	2,480	2,085	4,565

[1] Further education college with large percentage of advanced work.
[2] Further education college with low percentage of advanced work.

In Response To . . .

Education for Leisure

Alan Bryan, further education organiser for the City of Leicester writes:

J. A. Simpson's thoughts on education for leisure (Trends No 5) contain timely rebukes for those in adult education circles who, whether for years labouring vainly, or converted recently to the cause, see the leisure band-waggon as justification for their existence. His probing into basic assumptions does not, however, go far enough; we must apply his critical methods to the nature of leisure itself and indeed to the assumption on which he bases his methods.

If leisure is defined as the time available to an organism after performing the functions necessary for its survival, considerably more 'free time' could be available if needs remained constant while the economic process became more efficient. In human groups, however, the biological minimum is supplemented by a social minimum which varies according to the standards of an individual's group or the group to which he aspires. This 'free time' available after completing one job may be used voluntarily (insofar as a deliberate choice is made) to perform another. The use of leisure may also vary and be evaluated according to the type of society and its development. Thus the three-session day may be approved for lecturers and teachers but deplored for factory workers. Those for whom leisure is no problem, for they enjoy it so much that it is preferred to working, are termed social misfits. Henry Thoreau, that early American beatnik, is worth re-reading in this context—'It is something to be able to paint a particular picture, or to carve a statue, and so to make a few objects beautiful; but it is far more glorious to carve and paint the very atmosphere and medium through which we look, which morally we can do. To affect the quality of the day, that is the highest of the arts'.

If both the amount and use of leisure may be socially determined, it may be interesting to question the philosophy of those who suggest that 'a problem of leisure' exists, or those who ponder 'the contribution the education service can make to a more satisfying use of free time'. As Simpson suggests, they are expressing, whether they are frank about it or not, their disappointment with the way . . . . . that people use their time.' Professor Bantock is perhaps typical: 'Where work is unsatisfactory, as for a considerable percentage of people it must appear to be today, leisure comes to take on more and more importance; and with technical advance it comes to look as if "the stupid" —the unskilled—may find it more and more difficult to find work, while at the same time the hours of work will gradually be reduced for the rest.' (*Education in an Industrial Society*). But Simpson makes a similar value judgement later in his own article: 'Leisure pursuits and interests have acquired much greater importance in the lives of many, and it is in these often, rather than in their work nowadays, that they seek to find status and identity.' But, as Baldamus and others demonstrated some years ago, many workers performing so-called 'monotonous' tasks derived satisfaction from them (*Sociological Review*, March 1950). In the same way, it is probable that the patrons of bingo halls, pubs, clubs and other forms of mass entertainment derive considerable pleasure from these pursuits: it is the 'intellectual' that suffers *angst*.

May not the worries of those who see a problem of leisure—for others—derive from the advance of democracy? How far does a minority, some of whom believe they comprise an intellectual élite, fear they may be swamped by a majority, whether or not swayed by those who seek to influence mass behaviour? And if this fear is identified, what can be done to preserve the values are held to be worthwhile? The answer may lie in the reasons that the values are sustained—they have survived criticism, examination, and analysis, and are the stronger for being assailed.

The editors of Trends *welcome statements by readers in response to articles they have published.*

Reviews

Educational Planning: Old and New Perspectives

by W. Kenneth Richmond

Michael Joseph 50s.

This book is in part a straight account of the educational system of Hungary and Czechoslovakia such as might interest students of comparative education. About 60 per cent of the book is given to these descriptions, Hungary getting much the fuller treatment. The author has visited Hungary twice and he appears to have been conquered during his visits. We learn, from the travelogue insertions, that the sun shone brightly while he was there. The travelogue element is a kind of light relief not altogether unwelcome as a foil to the long and careful descriptive passages—for the architecture of education systems can never make for carefree reading—but one also is forced to ask if mention of the favourable weather is not an indication that the author's judgement may have been affected.

As soon as this question enters one's mind the answer is there too. Mr Richmond is biased. To some extent this would appear to be a deliberate coat-trailing technique. Unfortunately though, if the book aims to contribute to open-minded academic study, it fails the test of reasonable fairness and one hopes that students in colleges of education and university education departments will not take it too seriously. On the other hand it is provocative, and many parts of it could be taken as a useful agenda for a discussion group.

It is true that the author could claim that he does put the other side, for example:

> 'The results obtained in the schools are good because it feels good to be alive. The gratifying success of Hungarian teachers is not to be accounted for by their methods, excellent as these often are, still less by their equipment which is usually meagre: in the last resort it can only be explained in terms of an emotional and moral uplift which affects old and young alike.'

This is no 'bull' point for planning. We may quote, too, from the summing up on Czechoslovakia:

> 'In a sense it is a race against time: the policy makers have staked too much (without hedging their bets). . . . Pay off or inglorious collapse—which is it to be?'

Thus the author though he is intellectually and emotionally sold on central planning, does occasionally go over the fence to have a look round on the other side. This appears to release him, but not the reader, from the necessity for the deeper analysis the subject requires.

Central planning involves big gambles in getting the assumptions right. Continuous local adjustment gives untutored public opinion a chance to produce irrational muddles. This is not an either/or situation; the real question is 'How much of each?'

In Part I the author castigates the past shortcomings of the English education system with great verve. We are taken, once again, through the horrors of the class consciousness of our fathers and grandfathers minds and shown, what we know, that strong prejudices held by those in a position to determine events in the educational field account very largely for the system we had up till 1944. There is no awareness that our sons and grandsons may examine what we are doing with the same kind of hindsight. The author has an easy task with the psychology of the Hadow and Norwood reports. But he is hardly fair, possibly because he makes general war on official reports as an element in planning. He is ambivalent towards the Newsom Report, praising it highly (on page 39), smearing it (on page 18) with a quotation from another writer as 'this iridescent bubble'. All is grist to the argument of the moment.

In any case, no convincing assessment is offered of what planning and *laissez faire* have contributed to the English system. The truth is that up till the 1944 Act we had a rather rigidly planned system, by no means entirely resulting from bigotry. In their early days the 'scholar-

ship' and later the 11+ were movements towards a fairer access to opportunity. Moreover, since 1947 we have had, in the secondary field, a far less rigorously planned system than ever before in our history. For the first time the pressures of public demand for education have been allowed to work with great freedom and have contributed enormously to the defeat of the tripartite idea. Three types of school may have been the ruling idea in many peoples minds twenty years ago, but of their own free development the various types of secondary school have become more and more like one another and less and less like the types they are supposed to be, both in this book and (more excusably) in the mind of the general public. Would it in fact, at any earlier time, have been wise to let public demand rip so freely? The poignancy of the tension between unlimited wants and scarce resources in education is too little acknowledged in this book. This tension is clearer, in our own country, than ever it was and all who are engaged in education are feeling the pain inherent in fitting ambition for growth into practical limitations. Plan we must—but we plan, as we exercise freedom, at peril. The time for indignation is over, at any rate for the time being; what should absorb all our best energies in the immediate future is ways and means of making progress relative to the state of our resources. This book is of little help to such a task.

Between the historical introduction and the chapters on Hungary and Czechoslovakia lie 55 pages under the general heading of *New Perspectives in Educational Planning*. Here we get some more definite attempts to grapple with principles and priorities. How much education does the nation need? How much can it afford? What is the balance between personal education for an individual's own consumption and vocational education, especially when this latter is thought of in terms of national investment? Excellence *and* equality? Is total planning possible in a liberal democracy? Some shrewd points are made and some interesting questions opened up. But some questionable unsupported assertions are made. Do we really know, for instance, that the use of educational technology and operational research would reduce the number of teachers required, enhance their status and extend the range and scope of their work, and all without any extra cost? There are important questions in this field. They need patient examining, not just to be brought out of the hat in the form of solutions. There is already a literature about some of them—like team teaching and teaching machines—not all of which suggests that they lead either to man power or money savings.

In dealing with equality and excellence some diagrams are provided exhibiting the organisation of education in England, the USA the USSR, and Hungary plus one which guesses at the shape of things in England after 1970. The diagram on the English system, as it is now, presents it as rigidly tri-partite, with the secondary modern schools ending sharply at age 15 (no hint of the massive staying on at school or full-time education in further education institutions from 15 to 18). History has already falsified the diagram and has been falsifying it fast for at least 15 years. In important ways then, this book with a promising title, is misleading. This is a pity because it deals with many vital questions. It should surely be judged by the most rigorous intellectual standards since it is offered with the prestige attaching to a substantial piece of work by a senior lecturer at a university. Let us hope that students will be provoked to argument rather than persuaded.

J.W.W.

British Further Education
by A. J. Peters,
Pergamon Press, 63s.

The Young Worker at College
by Ethel Venables,
Faber and Faber, 36s.

The rate of change in many sectors of further education has been so remarkable that to keep pace over the whole front with even the bare outline of events is no mean feat. Mr Peters has provided a helpful, though not always a reliable guide, well

set-out, supplemented by useful tables and lengthy reading lists. It is sub-titled 'a critical text book', but the criticism is scanty. Chapter Two, for instance, deals with the aims of our national system of further education; it begins by asserting that these are governed by an estimate of *needs*. The needs are first for trained manpower, second for enlightened citizens, parents and consumers. Broadly the planners of the late 1940s supposed that the needs of the first group would be supplied by technical, commercial and art colleges and of the second by county colleges, youth service and adult education. 'By mediating between these two sets of needs', suggests Mr Peters, 'a list of objectives can be derived . . . whether it has been attained . . . is quite another matter.'

We are now eager and alert for the criticism promised by the sub-title. But before we get it (in the final chapter), there are 250 pages of text book description. Here some sentences are even more boring than they need be. It is true that an attempt is made to sound an occasional note of challenge. 'Day release, though better than no release, is an inefficient way of teaching . . . the technical content of courses always tends to grow, making pressure on available time ever greater . . . there is nothing in further education comparable with the Schools Council.'

The final chapter is an attempt at assessments. Rightly, Mr Peters points to release from employment as the key factor. But even if that battle had been fully won, the logistics of teachers, buildings, control and examination would remain formidable problems. He concludes with a wild swipe at the government's policy for higher education, but on the White Paper of May, 1966 there is no comment.

Few students of education require so much detail; Lady Venables' book is immeasurably more useful. She concentrates on a single college, but brings to bear on it not only the techniques of an expert investigation but her long and close personal experience of technical education. How valuable this is can be seen by comparing her treatment of the new 'general' courses, G.1 and G.2, with that of Mr Peters. Having described the structure in outline, Lady Venables' method is to go inside the college and tell us what goes on there. In so doing she contributes an important commentary on educational history, teaching, examining and the relationship between colleges and industry. She is thus in a position to present in a final chapter some highly pertinent criticism of English further education. They should be widely read and may be briefly summarised.

The voluntary system of *release* from work to education stands condemned. It is not good enough for our modern society or for our young workers as individuals. It produces conditions within an institution that tend to qualify its function as a provider of genuine education. The primary duty of a local college is not to industry, but to its students. The government of colleges must be reformed to give greater responsibility to the staff. Apprenticeship and the examination system—especially for craft students—needs radical revision. The departmental structure of most colleges is obsolescent. Education, she concludes, can be provided in partnership with industry, but not in subservience to it. In the end of the Industrial Training Act all concerned with Further Education should listen to Lady Venables.

D.M.H.

Child Care

British Medical Association, 30s.

This book, based on a series of articles previously published in the British Medical Journal, is primarily for family doctors, each section being written by an authority in that particular field and giving practical advice on dealing with problems likely to be met in children in a general medical practice. A number of chapters, however, will be found helpful and interesting by a much wider reading public: by all who are dealing with children and young people.

The chapter on normal development is a useful, concise summary, stressing the individuality of every child and the variety of patterns of normal development as well as the difficulties of developmental diag-

nosis and the need for total assessment of the child rather than of separate handicaps. The chapter on speech disorders, and on reading and writing difficulties, are both useful, not only outlining differential diagnosis but also in stressing how frequent communication problems may be in children otherwise normal, and how these problems may be transient or more lasting, and therefore of more serious significance.

The chapter on puberty and adolescence underlines the wide variations both in age of puberty and in the incidence of anxieties and emotional problems at this period of development.

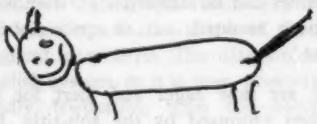
The section on emotional and behavioural disorders covers a wide range of problems encountered in school children, from overeating to school phobia and truancy. The problems of the overweight child are considered in detail in another chapter.

Handicapped children are considered in several chapters, most of them giving practical consideration to educational problems which may arise. In the chapter on deafness the assessment, management and education of hearing handicapped children are summarised, but the section on schooling is over-simplified.

E.S.

INSIDE THE PRIMARY SCHOOL

by John Blackie 5s.



Today parents want to know about their children's education. To help meet this need, the Department of Education and Science asked John Blackie, formerly Chief Inspector of primary schools, to tell parents - out of his own experience - how these schools are changing and why.

Obtainable from HMSO bookshops, or through your bookseller.

Teaching Contemporary Mathematics in the Elementary School
by Charles F. Howard and Enoch Dumas
Harper & Row 60s.

Modern Mathematics for Young Children
by Z. P. Dienes
ESA 6s. 10d.

At the root of the changes that are now taking place in the teaching of mathematics is the idea that we live in a mad, mad world where problems arise which excite our curiosity. In the classroom they can (and should) be *made* to excite it. At whatever level mathematics is taught, unless new material is introduced in such a way that boys and girls have ample scope for active, creative learning, their attitude to the subject will not be greatly influenced, even though the new material seems to be exciting in itself.

From this point of view, two recent books on teaching mathematics to younger children—one from America and one from this country—are open to criticism.

'Sound in methods and in content, *Teaching Contemporary Mathematics in the Elementary School* introduces the concepts of contemporary mathematics now being included in the curriculum of modern elementary schools. Using the "guided discovery" approach to learning mathematical concepts, the book emphasises how the new material may be introduced to children and made understandable to them'.

This account on the dust cover of a book by Charles F. Howard of Sacramento State College and Enoch Dumas of the University of California at Berkeley will encourage readers to study the book with much interest. They may be acutely disappointed, however—not in the soundness and thoroughness of the development of the material, for the claims made are amply justified in this respect—but in the solid dullness of it. From the outset it is assumed that a teacher will take his class as a unit. This book is deliberately a 'content' volume, as the authors properly point out.

The chief concern of the authors is to give a sound knowledge of ideas from modern mathematics and to prepare for the further development of mathematical ideas at a later stage. From the beginning 'set' concepts are used to introduce number concepts and the operations on numbers. Much emphasis is laid on the now familiar expanded notation (362 written as $300+60+2$) as an aid to understanding, and on the commutative and associative laws of addition and multiplication.

The difference between the guided discovery approach and the discovery approach teachers are encouraged to use in this country is highlighted in the section on non-negative rational numbers (i.e. fractions). The authors write: 'We use physical models (fraction cards) to make "definitions" seem reasonable to children. By using models we try to guide the children to formulate a suitable definition for themselves, phrased in their own way, so that they will understand the formal definition when they meet it later. Such a formal definition for the additional fractional numbers might be worded as follows:

If a, b, c and d represent numbers, and if neither b or d is zero, then

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}$$

'The child is guided gradually to a discovery of this definition by learning to add first fractions with like denominators, then fractions with unlike denominators.'

In marked contrast to this highly abstract approach, children in the United Kingdom meet simple fractions in their everyday lives from a very early age in the problems they set themselves in their endeavour to find answers to the many questions they ask.

The reader's depression may be lifted as he reads the chapter on 'Non-decimal numeration system'. Here the rigour of pure mathematics is suspended for a while but I wondered whether the authors had come across Diene's multi-base blocks, as reference to this material would have shortened the section considerably.

Non-metric geometry—the title in itself might have been a warning—was another disappointment. It outdoes Euclid in the rigour of its definitions of points, lines and planes. Where is the excitement of real

experience and experiment with varied shapes? Would an American class (of forty-eight 10-year-olds) ever have their imagination so fired by the thought of a turning point on a graph that they continued for two days, calculating angles of regular polygons with an ever increasing number of sides, trying to see whether they could reach 180 degrees or turn the graph?

The foreword to Z. P. Dienes' *Modern Mathematics for Young Children* is in some respects a marked contrast to the philosophy expressed in the American book. 'The aim of the method suggested is complete understanding of every detail of mathematical activity by every child in the school. It need hardly be said that such an aim is hard to achieve but it must also be said that it is possible to achieve'. Dr Dienes asks for an abundance of materials, not for "demonstration" by the teacher, but as an essential tool in the learning armoury of every child. There should be sufficient material during the mathematics lesson for every child to have access to whatever he might need in trying to solve a problem. Children should be encouraged to work in groups.

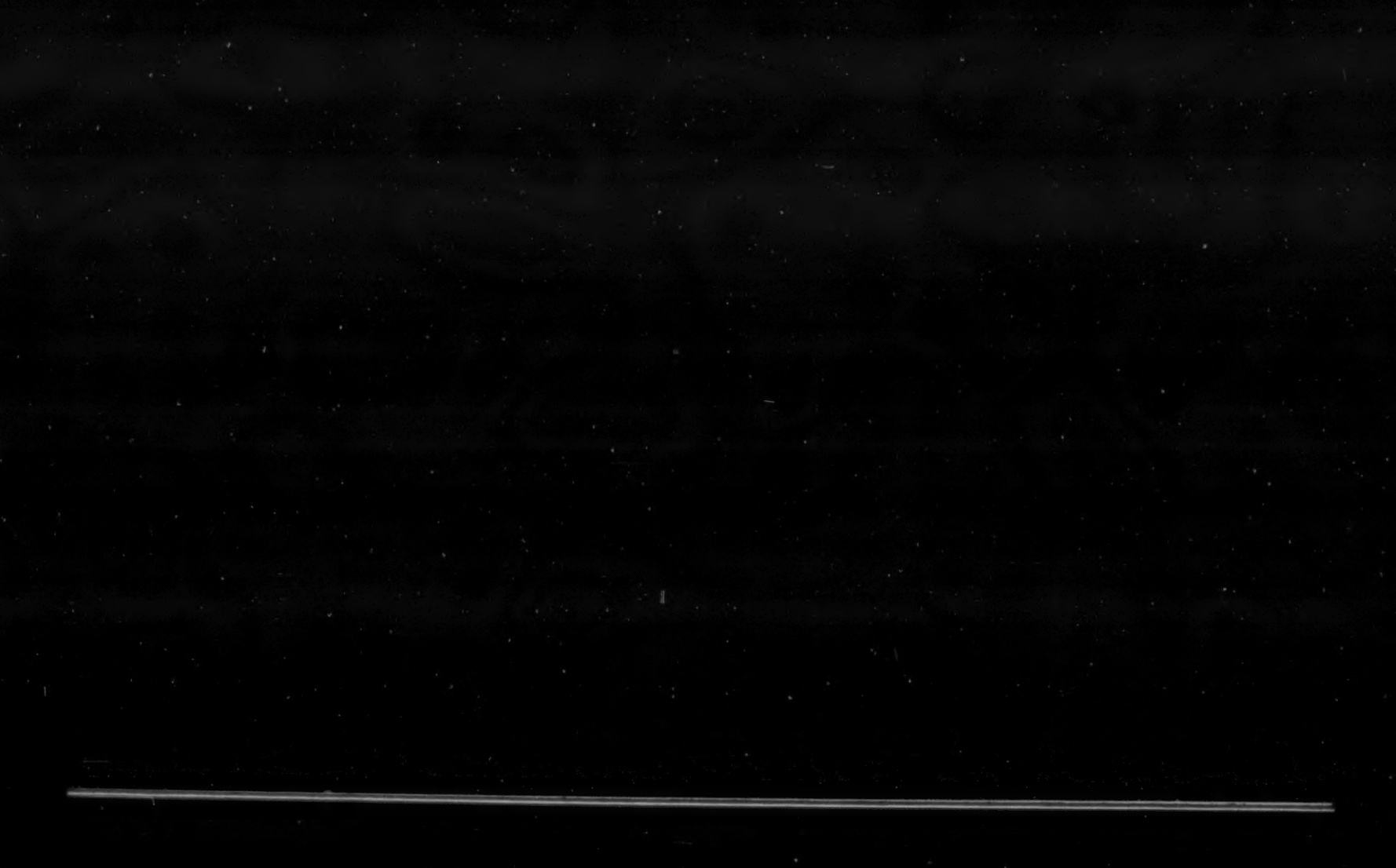
I wonder if Dr Dienes really means it when he says, 'Discussion will give way to authoritative statements, involving respect on the part of the teacher for the child's thought as a growing dynamism.' This statement is not attuned to the rest of the foreword. And on page 15 we read: 'Since the ultimate source of all learning is experience, it would not be surprising to find that personal, as opposed to second-hand experience, leads to more effective learning, particularly in the case of young children.'

These sound principles of learning are associated in this book, as the title indicates, with modern mathematics. 'Number is an abstraction. Numbers do not exist. Numbers are *properties*, but they are properties of sets of things not of things. There is an intermediate world between the world of things and the world of numbers, namely the *world of sets* . . . .Relationships between sets leads to *logical* considerations while properties of sets lead to *mathematical* considerations.'

It is interesting that Professor Dienes, in his operations on sets, begins with union (before intersection). In the many experiments initiated at the secondary stage in the United Kingdom intersection invariably precedes union. I have seen an 8-year-old struggling with intersection and succeeding when he was using real materials. Union is not as easily understood, even by adults, as intersection. Dr Dienes rightly says, 'A great many examples will be necessary before the process of union becomes clear'. Many new ideas and extensions are compressed for the teacher in chapter two. In chapter three the material (attributes and logical operations) is far more structured and is reminiscent of former books by Professor Dienes on his work with children.

A few really bright children might devise the logical symbolism found towards the end of this chapter for themselves but surely this would not happen before a child is eight years old? The 10-year-old in his writing on density had made a good many algebraic abbreviations for himself although he had not been taught algebra (for example he wrote o for object and rw for rise in water level). If this symbolism comes naturally to children at the age of nine or ten, should we enforce our own symbolism before children meet the need for this in their own problems and so devise their own symbolism?

The chapter on numbers and the origin of notation concludes, 'The accent has been on children playing games, and the ultimate aim will be an eventual realization of the relationship between numbers and their properties'. Teachers may find this part of the work difficult, but the section on the structured stages discussing the use of the multi-base arithmetic blocks will be easier to follow. The book ends with a brief section on practical applications.

These two books do not tell us about the real world but about a cold highly structured mathematical world which pays lip service to our real environment. To many of us this seems a most academic approach for the primary stage of education.

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